Verghilov, Vasil

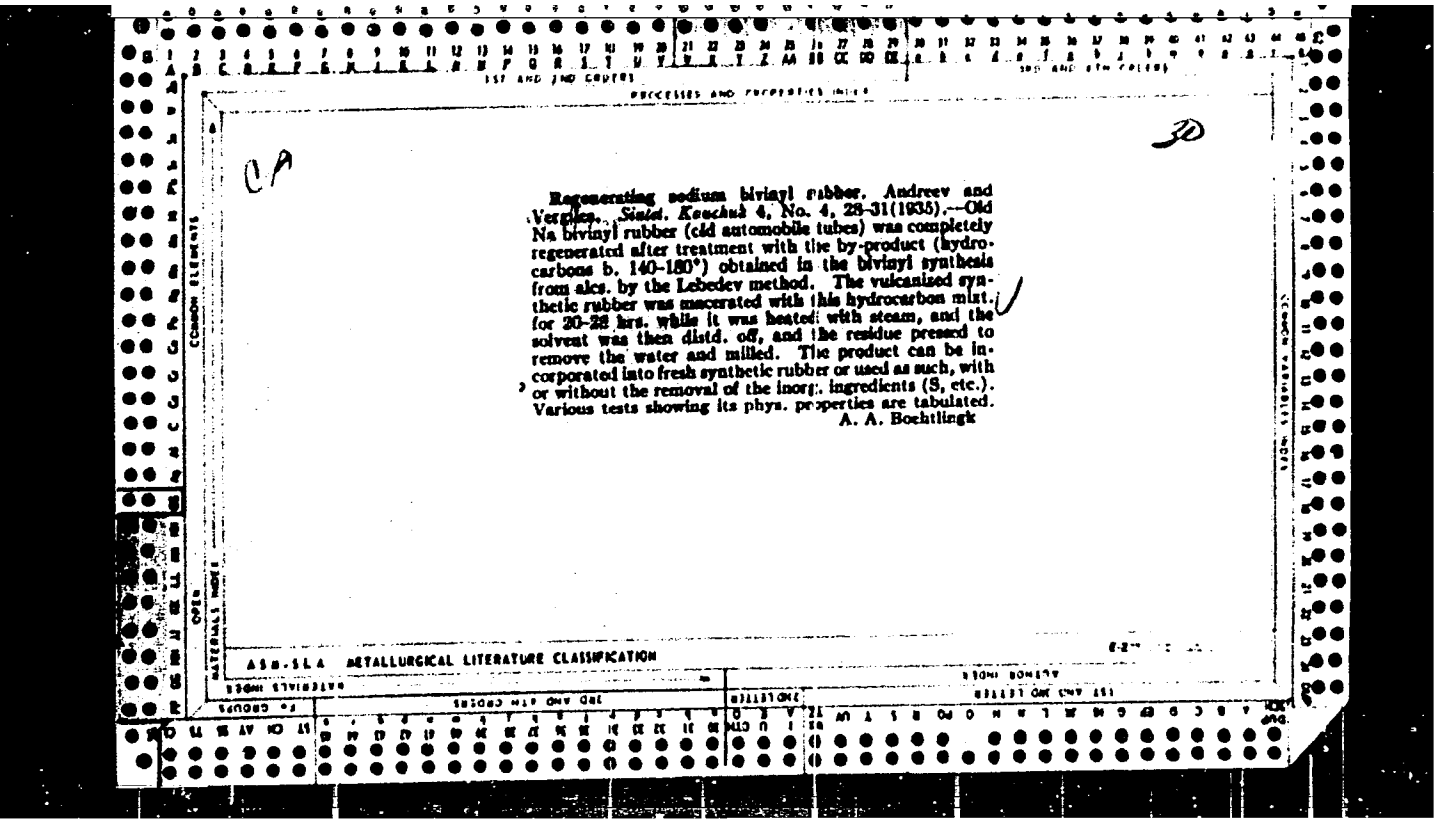
Mineral composition and geochemistry of the pegmatites of Kalkovo, Samokov District. Vasil Verghilov. *Bulgar. Akad. Nauk, Izvest. Geol. Inst.* 11, 25-55(1955)(English summary).—The pegmatites cut gabbro-diorites. Some are unzoned, contg. microcline, quartz, biotite, and plagioclase, but most are zoned. The wall-zone is quartz-oligoclase + contg. allanite, biotite, and zircon; 5 other zones are distinguished, including a quartz core. Optical data are given for the minerals and partial chem. analyses of the microcline and of allanite (rare earth, Zr, etc. Th). 2 [illegible]

Michael Fleischer.

VERGILES, K. A.

"Pathological and Morphological Comparison of Changes in the Red Bone Marrow, the Brain, the Internal Organs of Swine During Acute Forms of Erysipelas." Cand Vet Sci, L'vov Zooveterinary Inst, Min Higher Education USSR, L'vov, 1954. (KL, No 10, Mar 55)

SO: Sum. No. 670, 29 Sep 55--Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)



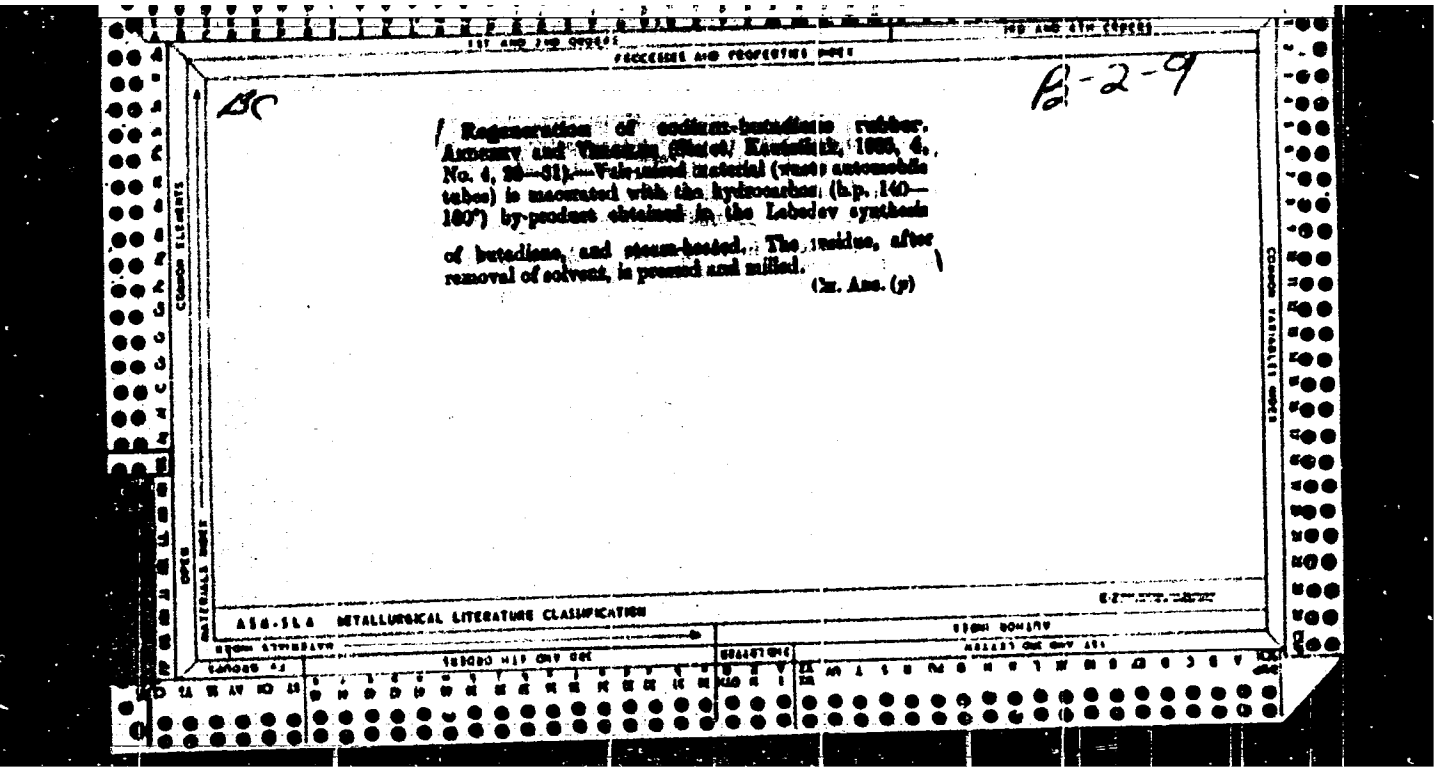
CA

30

Regenerating sodium divinyl rubber. Andreev and Verglas. *Sintet. Kauchuk* 4, No. 4, 28-31(1935).—Old Na divinyl rubber (old automobile tubes) was completely regenerated after treatment with the by-product (hydrocarbons b. 140-180°) obtained in the divinyl synthesis from alcs. by the Lebedev method. The vulcanized synthetic rubber was macerated with this hydrocarbon mixt. for 20-28 hrs. while it was heated with steam, and the solvent was then distd. off, and the residue pressed to remove the water and milled. The product can be incorporated into fresh synthetic rubber or used as such, with or without the removal of the inorg. ingredients (S, etc.). Various tests showing its phys. properties are tabulated.

A. A. Boehtlingk

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



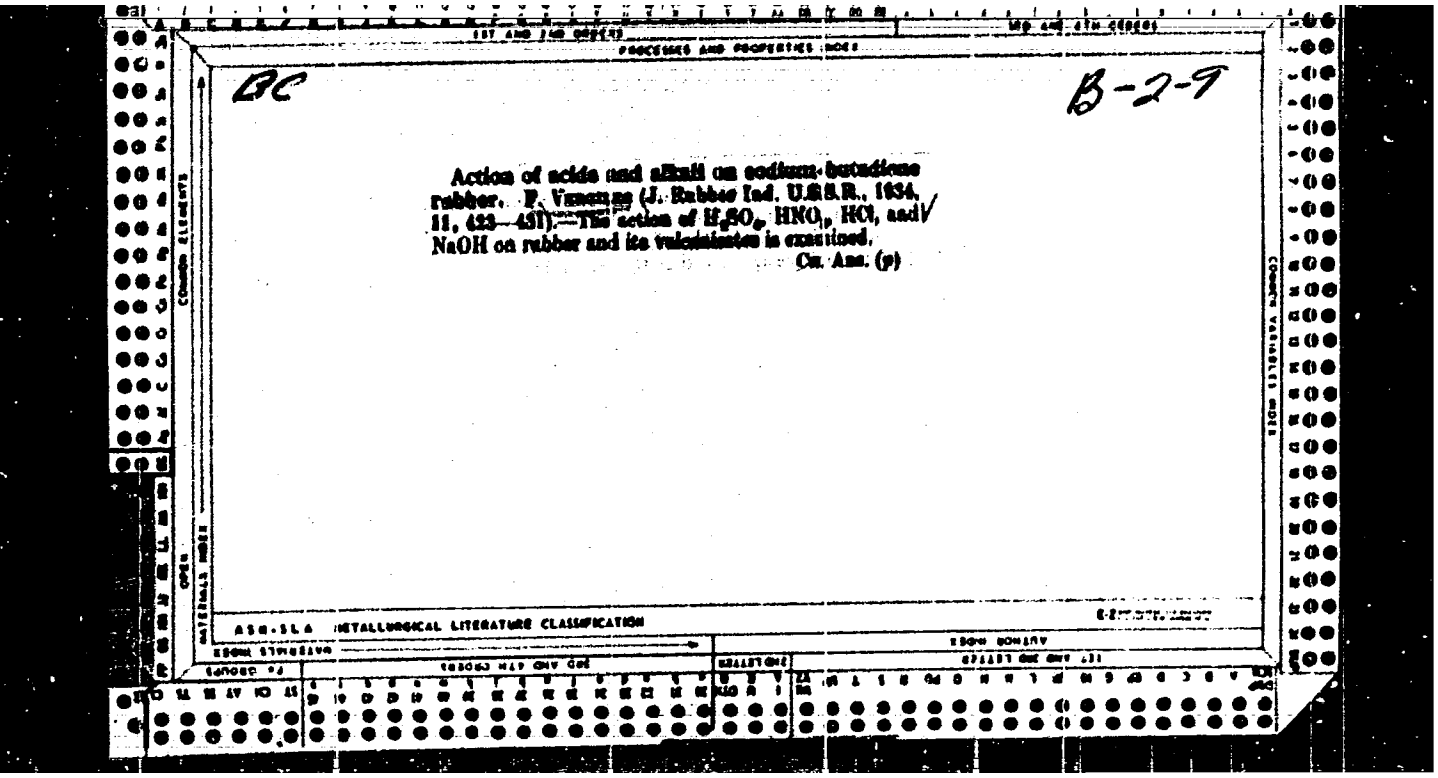
BC

B-2-9

Regeneration of sodium-butadiene rubber. Antonov and Tikhonin (Head of) Kauchuk, 1938, 4, No. 4, 30—31).—Vulcanised material (waste automobile tubes) is macerated with the hydrocarbons (b.p. 140—180°) by-product obtained in the Lebedev synthesis of butadiene, and steam-heated. The residue, after removal of solvent, is pressed and milled.

(Ir. Abs. (p)

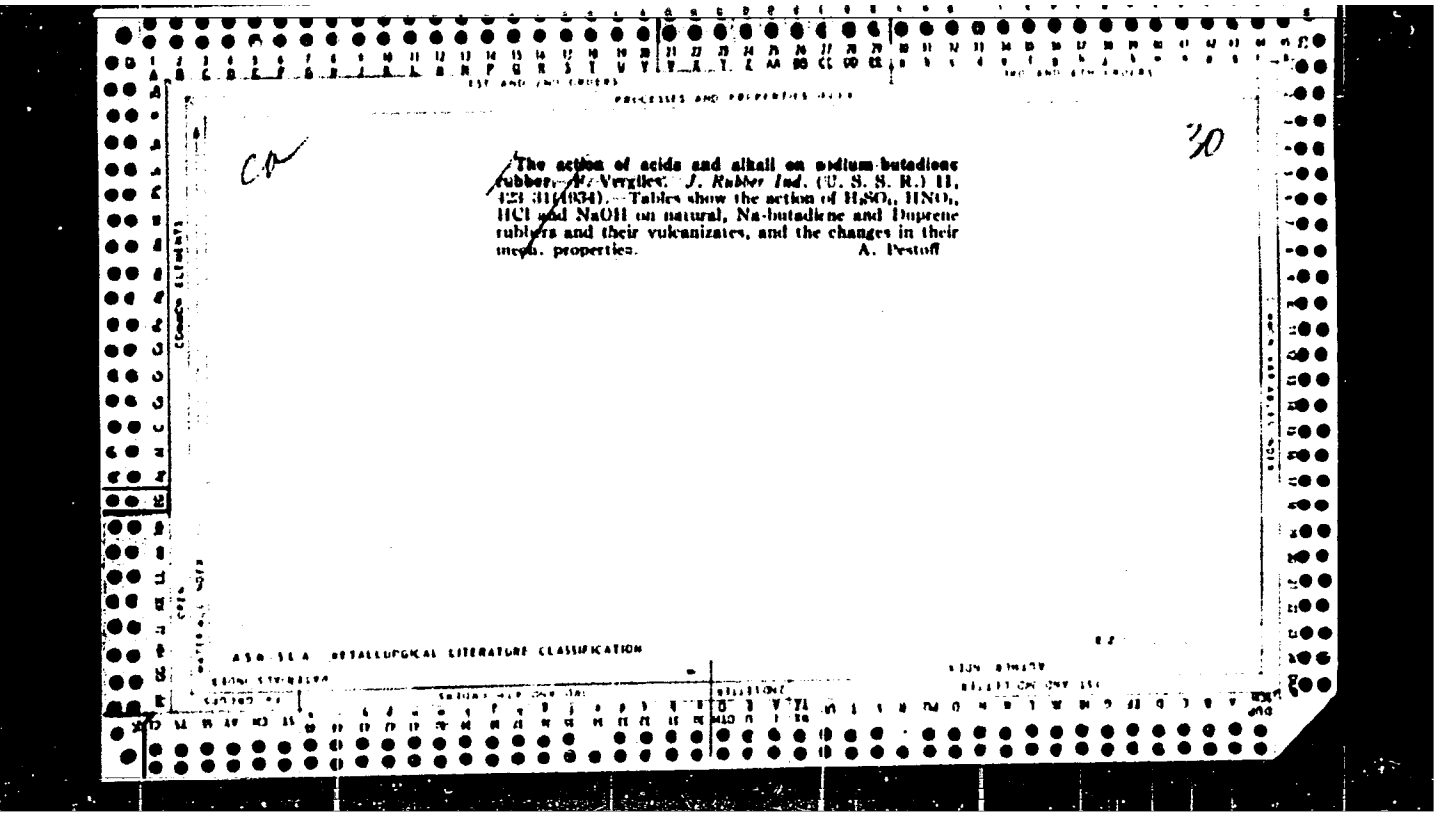
A56-516 METALLURGICAL LITERATURE CLASSIFICATION



BC

B-2-9

Action of acids and alkali on sodium-butadiene rubber. P. Vanenge (J. Rubber Ind. U.S.S.R., 1934, 11, 423–431).—The action of H_2SO_4, HNO_3, HCl, and NaOH on rubber and its vulcanizates is examined.
Cu. Abs. (p)



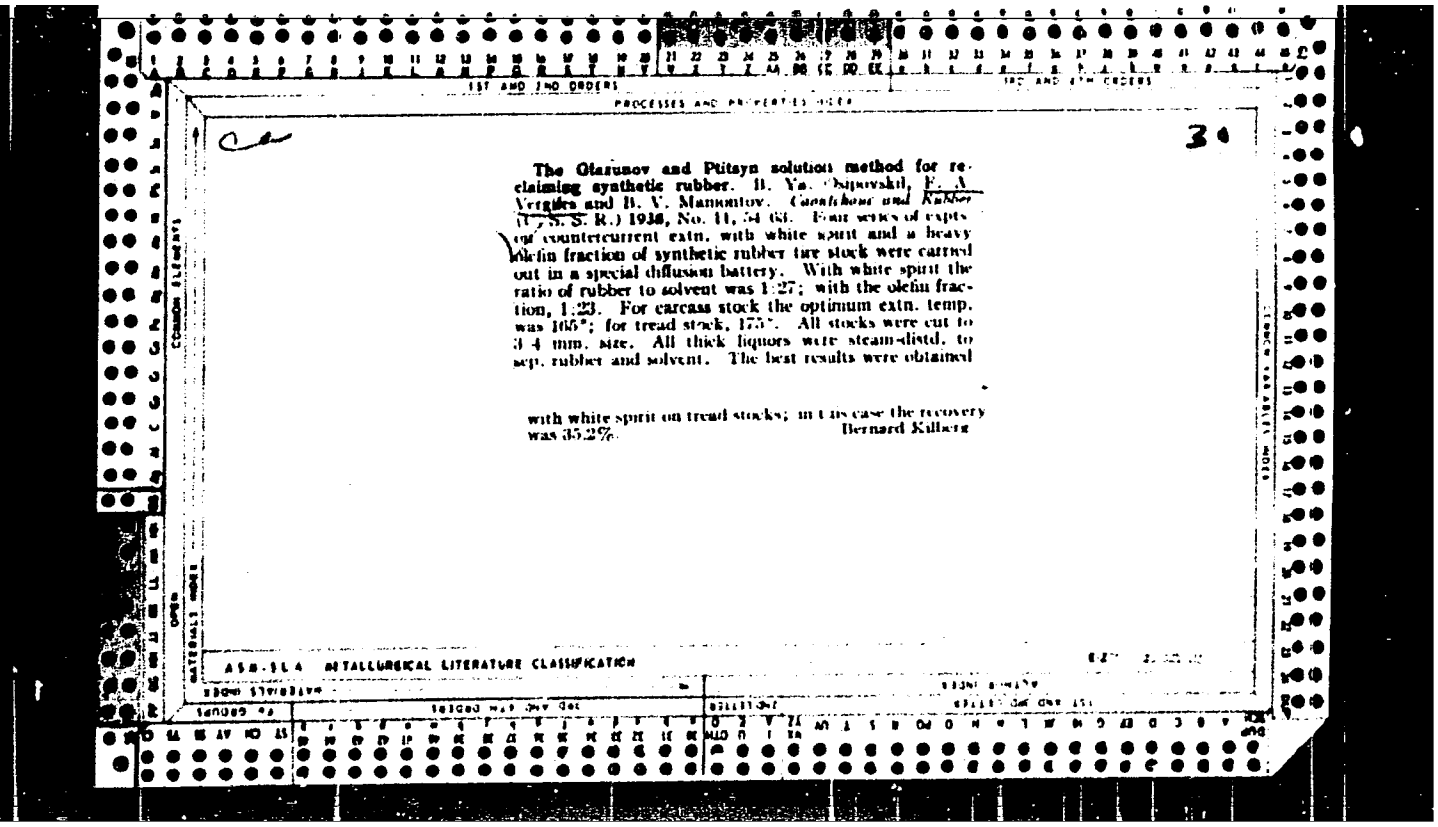
CA

30

The action of acids and alkali on sodium-butadiene rubber. P. Vergilev. *J. Rubber Ind.* (U. S. S. R.) 11, 123-31(1934).—Tables show the action of H_2SO_4, HNO_3, HCl and NaOH on natural, Na-butadiene and Duprene rubbers and their vulcanizates, and the changes in their mech. properties. A. Pestoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VERGILES, F.A.,
S. A. SUBBOTIN, Russ. 43,152, May 31, 1935



The Glazunov and Ptitsyn solution method for reclaiming synthetic rubber. B. Ya. Osipovskii, F. A. Vergiles and B. V. Manuntov. *Caoutchouc and Rubber* (U. S. S. R.) 1938, No. 11, 54-61. Four series of expts. on countercurrent extn. with white spirit and a heavy olefin fraction of synthetic rubber tire stock were carried out in a special diffusion battery. With white spirit the ratio of rubber to solvent was 1:27; with the olefin fraction, 1:23. For carcass stock the optimum extn. temp. was 165°; for tread stock, 175°. All stocks were cut to 3-4 mm. size. All thick liquors were steam-distd. to sep. rubber and solvent. The best results were obtained with white spirit on tread stocks; in this case the recovery was 35.2%.

Bernard Kilberg

GIPPENREITER, Yu.B.; VERGILES, N. Yu.; SHCHEDROVITSKIY, L.P.

Modified method for the registration of eye tremor. Vop. psikhol. no.5:118-121 S-O '64

1. Otdeleniye psikhologii Moskovskogo universiteta.

BABAYANTS, R.S.; BLAGOVESHCHENSKAYA, V.V.; VERGILESOVA, O.S.; VISSONOV, Yu.V.; VYALOVA, N.A.; GLAZUNOV, I.S.; DRUTMAN, R.D.; KLEMPARSKAYA, N.N.; KOTOVA, E.S.; KURSHAKOV, N.A., prof.; LARICHEVA, L.P.; LYSKOVA, M.N.; MALYSHEVA, M.S.; PETUSHKOV, V.N.; RYNKOVA, N.N.; SOKOLOVA, I.I.; STUDENIKINA, L.A.; CHUSOVA, V.N.; SHESTIKHINA, O.N.; SHULYATIKOVA, A.Ya.; SHTUKKENBERG, Yu.M.; BARANOVA, Ye.F., red.

[Acute radiation lesion in man] Ostraia radiatsionnaia travma u cheloveka. Moskva, Meditsina, 1965. 313 p. (MIRA 18:9)

1. Chlen-korrespondent AMN SSSR (for Kurshakov).

IORDANOV, N.; VERGILOV, V.; PAVLOVA, M.

Geologic age of the crystalline complex and the ganitoids in southern Bulgaria, determined by the Argon method. Izv Geol Inst BAN 11: 33-39 '62

VERGILOV, V.; KOZHUKHAROV, D.; MAVRUDCHIEV, B.

Notes on the Western-Rhodopean batholith and its contact cover.
Izv Geol inst BAN 9:153-196 '61.

VERGILOV, V.; KOZHUKHAROV, D.; MAVRUDCHIEV, B.

Notes on the Western Rhodope Mountains batholith and its contact mantle. Izv Geol inst BAN no.9:153-195 '61.

Vergilov, V.

Migmatitic and pegmatitic veins in some marble from the Central Rhodope Mountains. p. 81.

Bulgarska akademiia na naukite. Geologicheski institut. IZVESTIA. Sofiia, Bulgaria. Vol. 7, 1959.

Monthly list of East European Accessions Index (EEAI), LC, Vol. 18, no. 12, December 1959.
Uncl.

VERGILOV, V.

"Mineral composition and geochemistry of the pegmatites of Kalkovo villiage, Samokov District."

p. 25 (Bulgarska akademiia na naukite. Geologicheski institut. Izvestiia. Vol. 3, 1955, Sofia, Bulgaria)

Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 2, February 1958

VERGOVISKIY V. I.

VERGOVSKIY V. I. "Rust of Mint and Its Control," Trudy po Lekarstvennym i Lekarstvenno-Tekhnicheskim Rasteniam, vol. 3, 1935, pp. 5-54. 77.9 S14

SO: SIRA SI-90-53, 15 Dec. 1953

VERGOVS'KIY, V. I.,

Fungus diseases of medicinal and ether-oily plants. Lubni, 1932. 46 p. (Vseukrains'ka stantsiia likars'kikh ta etero-oliinikh roslin. (Vidannia) vip. 25)

VERGOVSKIY V. I.

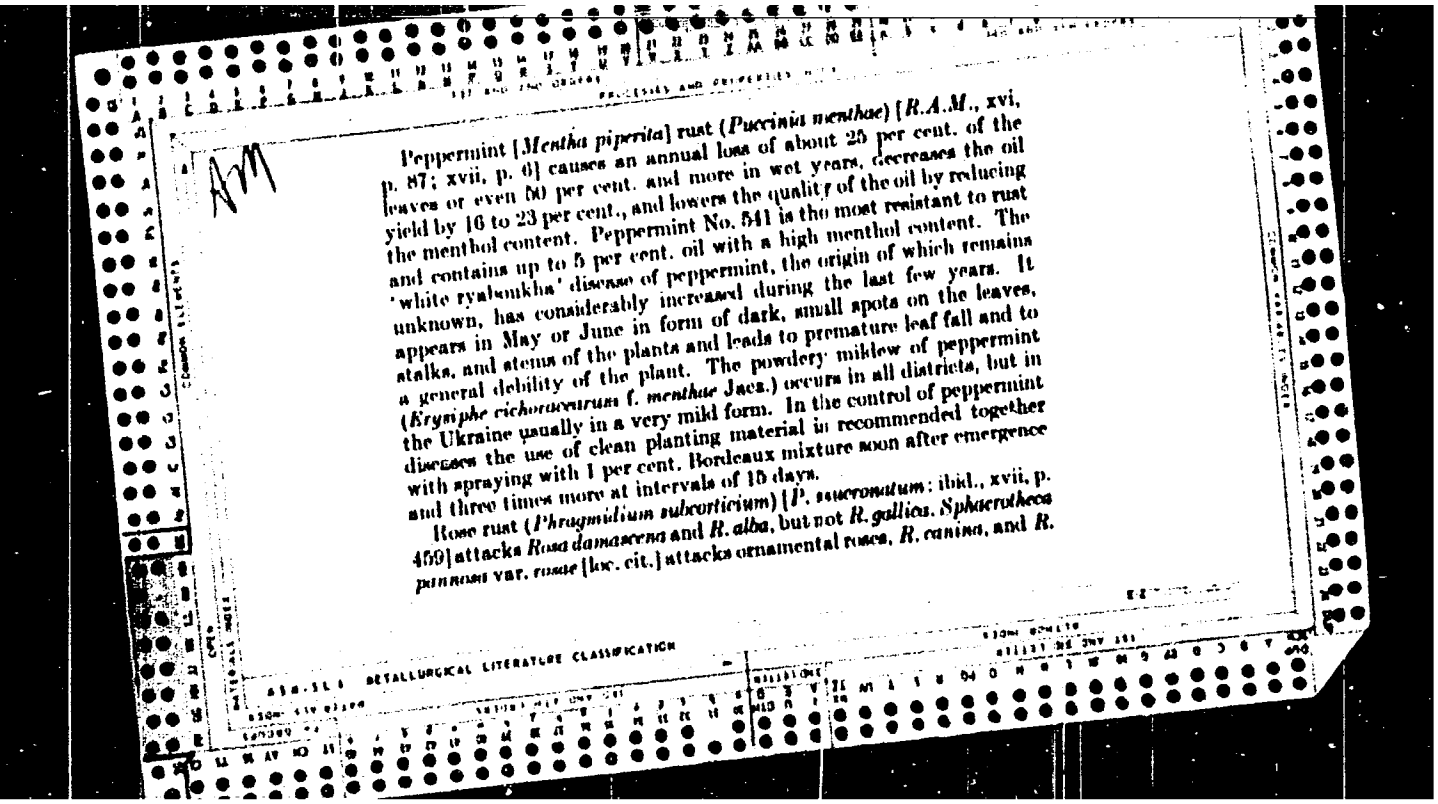
The control of pests and diseases of essential oil plants. Pushkino, VIEMP. 1938.
115 p.

Verdovsky (V. I.) & Vodolagin (V. D.). Вредители и болезни эфиромасличных растений и борьба с ними. [Pests and diseases of essential oil plants and their control.]—116 pp., 86 figs., Всесоюзн. научно-исслед. Инст. эфиромасл. пром., ,,ВНИЭМП''. [Pan-Soviet sci. Res. Inst. essent. Oil Ind. 'VIEMP'], 1938.

This is a practical handbook dealing with the symptoms and the control of pests and diseases of essential oil plants occurring in U.S.S.R. The chief disease of coriander [*Coriandrum sativum*] and anise [*Pimpinella anisum*] is a blackening and deformation of the fruit, resulting in a decrease of the yield. The etiology of the disease is obscure. Affected coriander seeds lose their germinability almost completely, while the germinability of anise is decreased by 30 to 50 per cent. The disease occurs in all districts where the plants are grown, the percentage of infected seed in the Voronezh district usually varying between 1 and 30 per cent., but rising in some years (e.g., 1937) to 50 per cent. or more. Witches' broom usually affects up to 3 per cent. of coriander and anise plants grown in the Voronezh district, the diseased plants forming no fruit. *Erysiphe umbelliferarum* occurs on anise in all districts but develops only to a very slight extent in dry years. For the general control of diseases of coriander and anise it is recommended to use clean seed, to sow the new crop as far as possible from land cropped in the previous year, to sow early, to remove and to destroy plant debris and straw, and to apply hot-water treatment to the seeds (pre-soaking for 8 to 12 or even only 3 hours and steeping in hot water at 50° C. for 15 to 30 minutes).

The root rot of thyme [*Thymus vulgaris*] due to *Fusarium* sp. usually forms several centres of infection in the field causing the bare patches. Disinfection of the patches is advised, together with a peripheral zone at least 0·5 to 1 m. wide, with bleaching powder applied at a rate of 100 to 200 gm. per sq. m.

The chief disease of fennel [*Foeniculum vulgare*] is caused by *Cercospora depressa*, which attacks the leaves, stems, and seeds, causing the seed to shrink and fall. In some years the seed losses in the forest-steppe belt of the Ukraine amount to 50 per cent. or more, and the oil yield of infected seeds is reduced by 15 per cent. *C. depressa* develops in the early summer and both infection and fructification occur only in presence of dew. In the autumn the conidia of *C. depressa* cease to form, but pycnidia of *Phoma anethi* are then found to be present. The *Cercospora* disease develops in the following spring from infected seeds and plant debris and is also spread from *Anethum graveolens*. *Alternaria tenuis* forms a black mould on the surface of the fennel seeds. Hot-water treatment of the seeds is recommended in the control of fennel diseases (pre-soaking for 15 to 18 hours at 17 to 20° and steeping in hot water at 53° for 10 minutes).

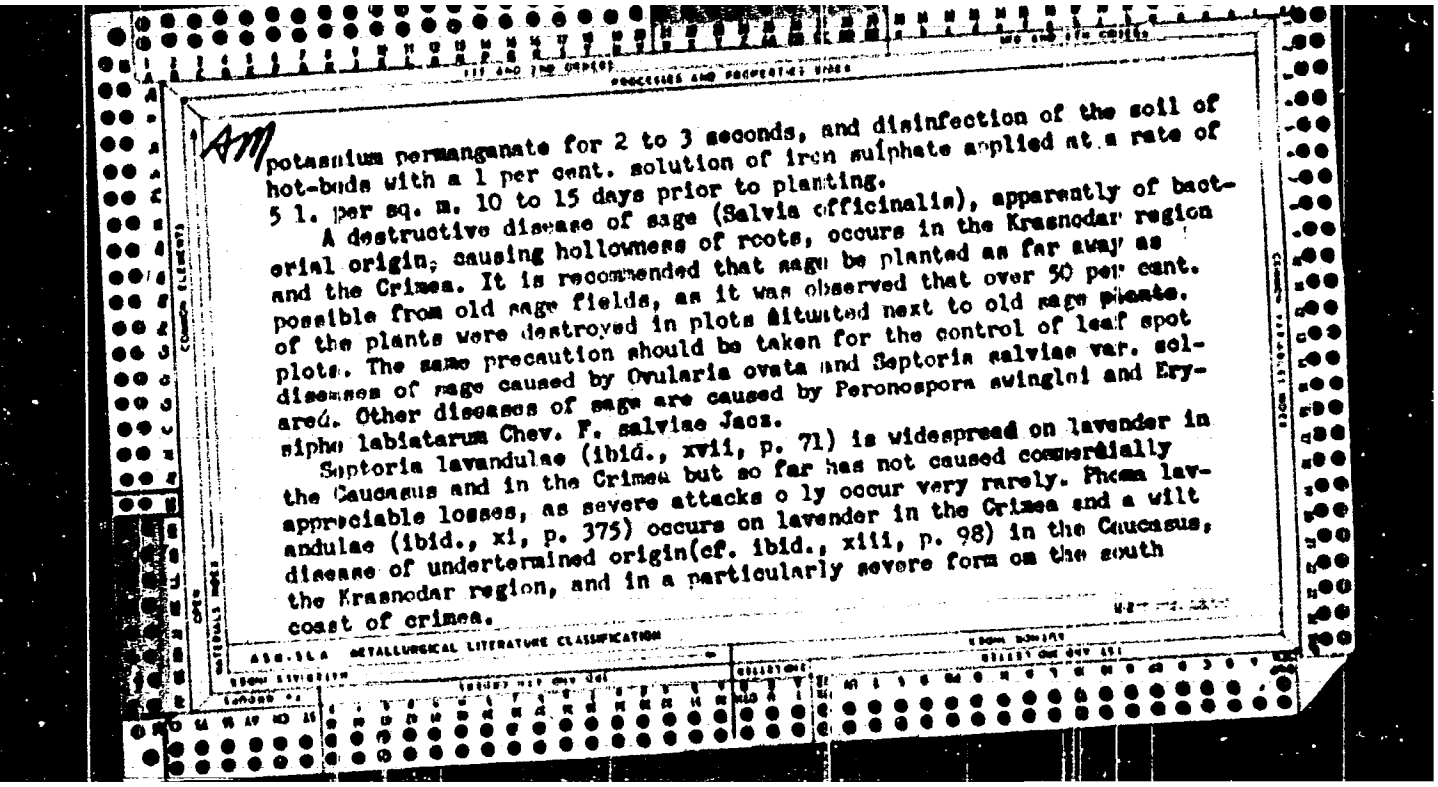


Peppermint [*Mentha piperita*] rust (*Puccinia menthae*) [*R.A.M.*, xvi, p. 87; xvii, p. 6] causes an annual loss of about 25 per cent. of the leaves or even 50 per cent. and more in wet years, decreases the oil yield by 16 to 23 per cent., and lowers the quality of the oil by reducing the menthol content. Peppermint No. 541 is the most resistant to rust and contains up to 5 per cent. oil with a high menthol content. The 'white ryabunkha' disease of peppermint, the origin of which remains unknown, has considerably increased during the last few years. It appears in May or June in form of dark, small spots on the leaves, stalks, and stems of the plants and leads to premature leaf fall and to a general debility of the plant. The powdery mildew of peppermint (*Erysiphe cichoracearum* f. *menthae* Jacz.) occurs in all districts, but in the Ukraine usually in a very mild form. In the control of peppermint diseases the use of clean planting material is recommended together with spraying with 1 per cent. Bordeaux mixture soon after emergence and three times more at intervals of 15 days.

Rose rust (*Phragmidium subcorticium*) [*P. sucrosomatum*; ibid., xvii, p. 459] attacks *Rosa damascena* and *R. alba*, but not *R. gallica*. *Sphaerotheca pannosa* var. *rosae* [loc. cit.] attacks ornamental roses, *R. canina*, and *R.*

gallica, but affects *R. damascena* only slightly. During the last three or four years a stem wilt of roses (caused by a species of *Fusarium*) resulting in the ultimate death of the plants has considerably increased in the Crimea. *R. gallica* was most severely infected, especially on plots where vegetables such as potatoes or tomatoes had been previously grown.

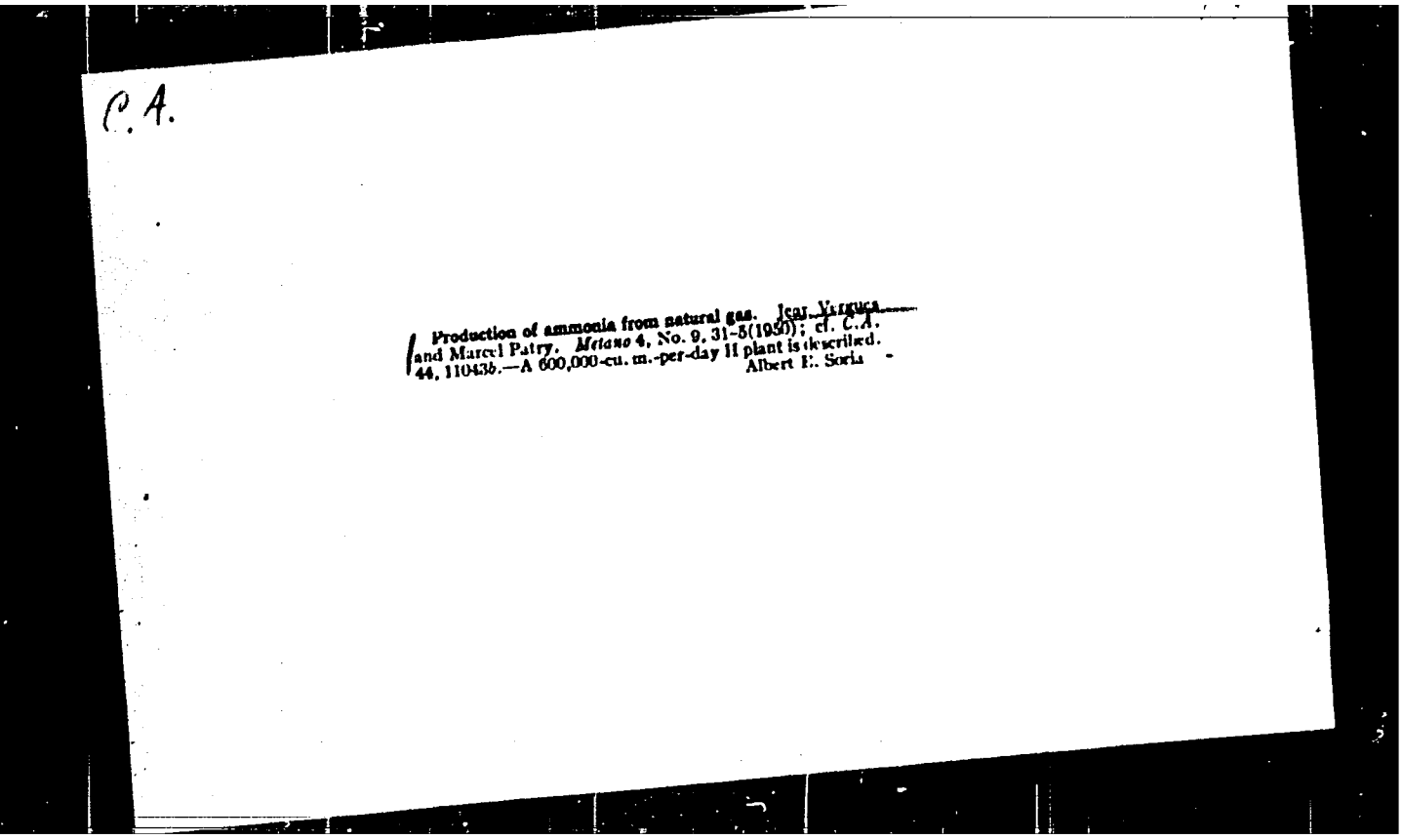
Geranium [? *Pelargonium*] cuttings in hot-beds are affected by species of *Botrytis* [ibid., xvi, p. 43], *Graphium*, and *Dendrodochium*, by leaf spots caused by species of *Macrosporium* [cf. ibid., xvi, p. 837], *Ramularia*, *Didymaria*, *Botryosporium*, and *Haplographium*, and by leaf bacteriosis. In the field the geranium plant is attacked by black root rot due apparently to bacteria, and by brown root rot (*Hypholoma velutinum*), characterized by rapid withering of the plants and chiefly occurring on fields newly cleared from forest trees. For the control of geranium diseases the following measures are recommended: crop rotation, removal of tree debris in newly cleared fields, disinfection of cuttings prior to planting in the hot-beds in a 0·1 per cent. solution of



potassium permanganate for 2 to 3 seconds, and disinfection of the soil of hot-beds with a 1 per cent. solution of iron sulphate applied at a rate of 5 l. per sq. m. 10 to 15 days prior to planting.

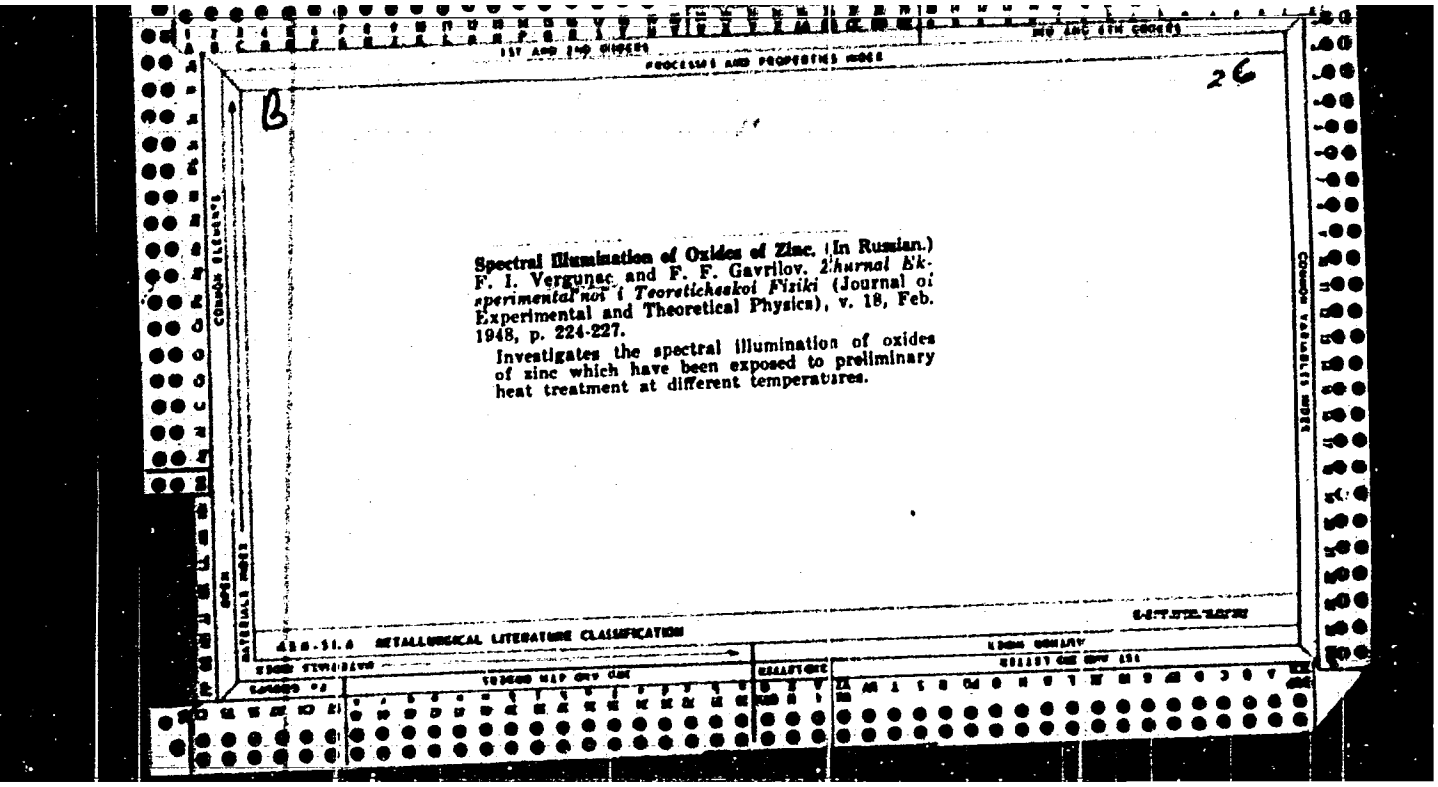
A destructive disease of sage (Salvia officinalis), apparently of bacterial origin, causing hollowness of roots, occurs in the Krasnodar region and the Crimea. It is recommended that sage be planted as far away as possible from old sage fields, as it was observed that over 50 per cent. of the plants were destroyed in plots situated next to old sage plants. plots. The same precaution should be taken for the control of leaf spot diseases of sage caused by Ovularia ovata and Septoria salviae var. sclared. Other diseases of sage are caused by Peronospora swinglei and Erysiphe labiatarum Chev. F. salviae Jacz.

Septoria lavandulae (ibid., xvii, p. 71) is widespread on lavender in the Caucasus and in the Crimea but so far has not caused commercially appreciable losses, as severe attacks o ly occur very rarely. Phoma lavandulae (ibid., xi, p. 375) occurs on lavender in the Crimea and a wilt disease of undetermined origin(cf. ibid., xiii, p. 98) in the Caucasus, the Krasnodar region, and in a particularly severe form on the south coast of crimea.



C. A.

Production of ammonia from natural gas. Jean Varenca and Marcel Patry. *Metano* 4, No. 9, 31-5(1950); cf. C.A. 44, 110436.—A 600,000-cu. m.-per-day II plant is described. Albert E. Soria



Spectral Illumination of Oxides of Zinc. (In Russian.) F. I. Vergunas and F. F. Gavrilov. *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki* (Journal of Experimental and Theoretical Physics), v. 18, Feb. 1948, p. 224-227.

Investigates the spectral illumination of oxides of zinc which have been exposed to preliminary heat treatment at different temperatures.

VYSHEMIRSKIY, F.A.; VERGELESOV, V.M.

Some characteristics of the structure of creamery butter. Izv. vys.ucheb.zav.; pishch. tekh. no.3:60-64 '63. (MIRA 16:8)

1. TSentral'nyy nauchno-issledovatel'skiy institut maslodel'noy i syrodel'noy promyshlennosti, laboratoriya maslodeliya i fiziko-khimicheskaya laboratoriya.

(Butter)

CHIZHKOV, B., tokar'; VERGEYCHIK, A., tokar'; SMIRNOV, M.; KRASOVSKIY, N.; SHITYKO, P.; CHAYKA, D.; MAZURENKO, P.

Same conditions bring different results. Okhr. truda i sots. strakh. no.1:30-33 Jl '58. (MIRA 11:12)

1.Instrumental'nyy tsekh Minskogo podshipnikovogo zavoda (for Chizhkov, Vergeychik). 2.Starshiy inzhenner po tekhnike bezopasnosti Minskogo podshipnikovogo zavoda (for Smirnov). 3.Sekretar' redaktsii zavodskoy mnogotirazhki "Za tekhnicheskiy progress" Minskogo podshipnokovogo zavoda (for Krasovskiy). 4.Glavnyy tekhnicheskiy inspektor Belsovprofa (for Shityko). 5.Spetsial'nyy korrespondent zhurnala Vsesoyuznogo tsentral'nogo soveta profsoyuzov "Okhrana truda i sotsial'noye strakhovaniye" (for Mazurenko).
(Minsk--Industrial hygiene)

VERGILOV, V.; KOZHUKHAROV, D.; BOIANOV, I.; MAVRUDCHIEV, B.; KOZHUKHAROVA, E.

Notes on the Prepaleozoic metamorphic complexes in the Rhodopean Massif. Izv Geol inst BAN 12:187-211 '63.

Vergilov, Vasil

BULGARIA/Cosmochemistry. Geochemistry, Hydrochemistry. D.

Abs Jour : Ref Zhur - Khimiya, No 10, 1958, 32072

Author : Vasil Vergilov.

Inst : Geological Institute of Academy of Sciences of Bulgaria.

Title : Mineral Composition and Geochemistry of Pegmatites at Kalkovo Village, Samokov District.

Orig Pub : Izv. Geol. in-t, B"lgar. AN, 1955, 3, 26-56

Abstract : The geochemical analysis of the minerals orthite, quartz, oligoclase, albite, microcline, biotite, zircon, apatite, titanite, tourmaline, magnetite, chalcopytite, molybdenite, pyrite, penninite, gilbertite and epidote from pegmatite veins in a gabbro-diorite plutonic body was carried out according to the scheme of A.E. Fersman. The pagmatite solution is rich in SiO_2, Al_2O_3, K_2O, Na_2O, TR and poor in

Card 1/2

9

BULGARIA/Cosmochemistry, Geochemistry, Hydrochemistry. D.

Abs Jour : Ref Zhur - Khimiya, No 10, 1958, 32072

B, P, Ti, Ca, Mg, Fe, Cu and Mo. A qualitative graph of Si, Al, K, Na, Ca, TR, Fe and Mg expansion in the pegmatite solution and a table of mineral formation by geochemical phases are presented.

Card 2/2

VERGILOV, V.

Petrologic studies of the crystalline schists on the northern slopes of the Central and Western Rhodope Mountains. Izv Geol inst. BAN 8: 223-269 '60. (EEAI 10:5)
(Bulgaria--Schists)

VERGILOV, V.; VENEVA, R.

Diabasic rocks from the boring at the village of Khitrino, Kolarovgrad District. Izv Geol inst BAN 8:271-283 '60. (REAI 10:5)
(Bulgaria--Diabase)

5(4) SOV/20-122-1-26/44

AUTHORS: Kargin, V. A., Academician, Bakeyev, N. F., ~~Vergin, Kh.~~

TITLE: On the Formation of Geometrically Ordered Structures in Amorphous Polymers (O vozniknovenii geometricheski uporyadochennykh struktur v amorfnykh polimerakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 1, pp 97-98 (USSR)

ABSTRACT: The purpose of this paper is an electron microscopic investigation of the structure of some amorphous polymers of various structures of the molecular chains. These investigations were carried out on polymers of arsenic (salvarsan), polyacrylamide, and on the copolymer on the basis of methylmetacrylate and metacrylic acid. Therefore, the authors investigate polymers which contain various polar groups in the chain and, therefore have different intramolecular and intermolecular interaction forces. The samples for the investigation were produced by fastening of the polymer solution on a film and subsequent evaporation of the solvent. The investigations were carried out with direct 18 000 - 20 000-fold electron microscopic enlargements. According to these investigations,

Card 1/3

On the Formation of Geometrically Ordered Structures in Amorphous Polymers

salvarsan, polyacrylamide, and the copolymer on the basis of methylmetacrylate and metacrylic acid form individual secondary aggregates in diluted solutions. These aggregates have the shape of molecular packets of various dimensions and shapes. For salvarsan and polyacrylamide, the formation of geometrically regular structures (rectilinear organic molecular packets) were observed. The regular shape of these packets is very noticeable. A packet composed of parallel molecular chains maintains the flexibility of a single individual chain. The revolutions of the packets by definite angles may cause the formation of geometrically regular structures in amorphous polymers. 3 figures show the microphotographies of the investigated polymers. These photographs were taken from concentrated solutions. The results of this paper confirmed the following assumption: The structure of the amorphous polymers has to be considered as a system of ordered molecular packets. The authors thank Professor M. Ya. Kraft and his fellow workers who placed the salvarsan to the authors' disposal. There are 2 references, all of which are Soviet.

SOV/20-122-1-26/44
On the Formation of Geometrically Ordered Structures in Amorphous Polymers

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 7, 1958

Card 3/3

VEREGITIN, I.Z., insh.

Chemigroundwood is a valuable semiprocessed product for paper industry. Bum.prom. 35 no.1:8-12 Ja '60.
(MIRA 13:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut tsellyuloznoy i bumazhnoy promyshlennosti.
(Woodpulp)

YUGOSLAVIA

J. LUKACEVIC, T. KOLUMBIC and V. VERGLES, Veterinary Institute (Veterinarski zavod) Krizevci.

"Importance and Significance of Bacteriologic and Parasitologic Tests on Genital Organs and Sperm of Bulls in Artificial Insemination Centers in the Prevention of Bovine Genital Diseases."

Belgrade, Veterinarski Glasnik, Vol 16, No 12, 1962; pp 1219-1224.

Abstract [German summary modified]: Among 450 cows inseminated with semen from a bull with genital trichomoniasis, 13 became infected: 11 aborted and in the other 2 purulent vaginitis was observed. Diagnosis was confirmed in the laboratory only in 1 of the 13 cases. Comprehensive discussion of implications. Ten Yugoslav, 13 Western, 1 Czech abstract of Turkish reference; table.

1/1

COUNTRY : USSR
CATEGORY : Plant Diseases. Diseases of Cultivated Plants 0

ABS. JOUR. : RZhBiol., No. 23 1958, No. 105045

AUTHOR : Vergovskiy, V. I.
INST. : All-Union Scientific Research Institute of Oleaceous *)
TITLE : Some Characteristics in the Development of Fusariosis on Basil.

ORIG. PUB. : V sb.: Kratkiy otchet o nauchno-issled. rabote Vses. n.-i. in-ta maslichn. i efiromaslichn. kul'tur za 1956 g. **)

ABSTRACT : The degree of the effection of basil seedlings with fusariosis is influenced not only by the presence of infection in the soil of the hotbeds and greenhouses, but also by excessively high temperatures at which the forming of the seedlings takes place. It is necessary to maintain the soil temperature in the greenhouses and hotbeds at not higher than 20°, while the basil seed plots should be spaced in crop rotations which preclude the cultivation of this plant in one field for longer than a year, at the same time carefully removing and destroying all plants with symptoms of fusariosis. -- G. A. D'yakova

CARD: 1/1

*)and Ethereal Oil Plants.
**)Krasnodar, "Sov. Kuban'", 1957, 195-197

EXCERPTA MEDICA Sec 15 Vol 12/8 Chest Dis. Aug 59

2001. TUBERCULOSIS IN THE RURAL ENVIRONMENT AND ITS CONTROL AT THE PRESENT STAGE - Tuberculoza în mediul rural şi combaterea ei în etapa actuală - Vergulescu A. and Spasiu A. - VIAŢA MED. 1958, 5/4 (357-366) Graphs 2

The authors point out the important achievements in the struggle against tb in Roumania. Lethality due to this disease has decreased by 77% in 1955 as compared with 1947. The authors critically review the organization of the antituberculous struggle in the rural environment, and suggest certain measures aimed at improving it.

(XVII, 15)

TIKHOMIROV, I.A.; VERGUN, A.P.

Obtaining and investigating the isotopic effect during the reduction of nitric acid to nitrogen oxides in the presence of mercury. Izv. SO AN SSSR no.3 Ser. khim. nauk no.1:154-156 '63. (MIRA 16:8)

1. Tomskiy politekhnicheskiy institut.
(Nitric acid) (Nitrogen oxides) (Nitrogen isotopes)

COUNTRY	:	USSR G
CATEGORY	:	Zooparasitology. Parasitic Worms. General Problems
ABS. JOUR.	:	RZhBiol., No. 2 1959, No. 5705
AUTHOR	:	Verrun, G. I.
INST.	:	Kharkov University; Scientific Research Institute of Biology and Biological Faculty*
TITLE	:	On the Fauna of the Trematode Larvae in the Molluscs of the Severnyy Donets River and Its Bottom Land Reservoirs in the Area of Its Middle Course**
ORIG. PUB.	:	Uch. zap. Khar'kovsk. un-t, 1957, 90, Tr. N.-i. in-ta biol. i biol. fak., 30, 147-166
ABSTRACT	:	In the summer of 1951 and in the spring and summer of 1953-1956, 2,511 molluscs belonging to 19 species and 7 families, originating from Severnyy Donets in the region of Kharkovskaya Oblast, were dissected. Trematode larvae were discovered in 527 individuals (21%); among these there were 41 species in the stage of cercariae,

*tute of Biology and Biological Faculty
**Course

CARD: 1/2

COUNTRY :
CATEGORY :

ABS. JOUR. : RZhBiol., No. 2 1959, No. 5705

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : 12 in the stage of metacercariae, 2 in the stage
cont'd. of tetracotyle, and one exhibited a progenetic
form. A list of the larvae with an indication of
the hosts and corrections to their morphology,
as well as a description and drawings of the fol-
lowing new species are provided: Cercaria (gen.?)
papillifera sp. n., C. (gen.?) roseonigra sp. n.,
C.(gen.?) multigranulosa sp. n. and C.(gen.?)
brevicoecum sp. n.

CARD: 2/2

VERGUN, G.I.

Mollusks of the Severnyy Donets River as accessory hosts of the trematodes. Zool. zhur. 41 no.4:519-527 Ap '62. (MIRA 15:4)

1. Department of Invertebrate Zoology, State University of Kharkov.
(Trematoda—Host animals) (Mollusks)

SOV/124-58-10-11471

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 110 (USSR)

AUTHORS: Vergun, P.I., Vilutis, A.F., Ivanov, V.N., Pereverzev, A.A., Petryagin, I.N., Yanyukhin, G.F.

TITLE: Calculations of Critical Loads and Frequencies of Natural Vibrations of Parabolic Arches (Vychisleniye kriticheskikh nagruzok i chastot sobstvennykh kolebaniy parabolicheskikh arok)

PERIODICAL: Sb. stud. nauchn. rabot. Altaysk. s.-kh. in-t, 1957, Nr 6, pp 89-98

ABSTRACT: Bibliographic entry

Card 1/1

VERGUN, S.

Soviet firms in operation. Den. i kred. 21 no.8:31-35 Ag '63. (MIRA 16:9)

1. Upravlyayushchiy L'vovskoy oblastnoy kontoroy Gosbanka.
(Lvov Province--Industrial organization)

VERGUN, S.; SHIFRIN, I.

Establishing working capital norms in industrial enterprises.
Den.i kred. 18 no.1:43-46 Ja '60. (MIRA 13:1)
(Finance)

VERGUN, S.; SHIFRIN, I.

Planning and use of working capital. Den.i kred. 17 no.2:50-54 F '59. (MIRA 12:5)
(Lvov Economic Region--Finance)

Vergun, V.S.

137-1957-12-23937

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 150 (USSR)

AUTHOR: Vergun, V.S.

TITLE: Copper Foundry Practice at the "Krasnoye Sormovo" Plant (Opyt raboty zavoda "Krasnoye Sormovo" po mednomu lit'yu)

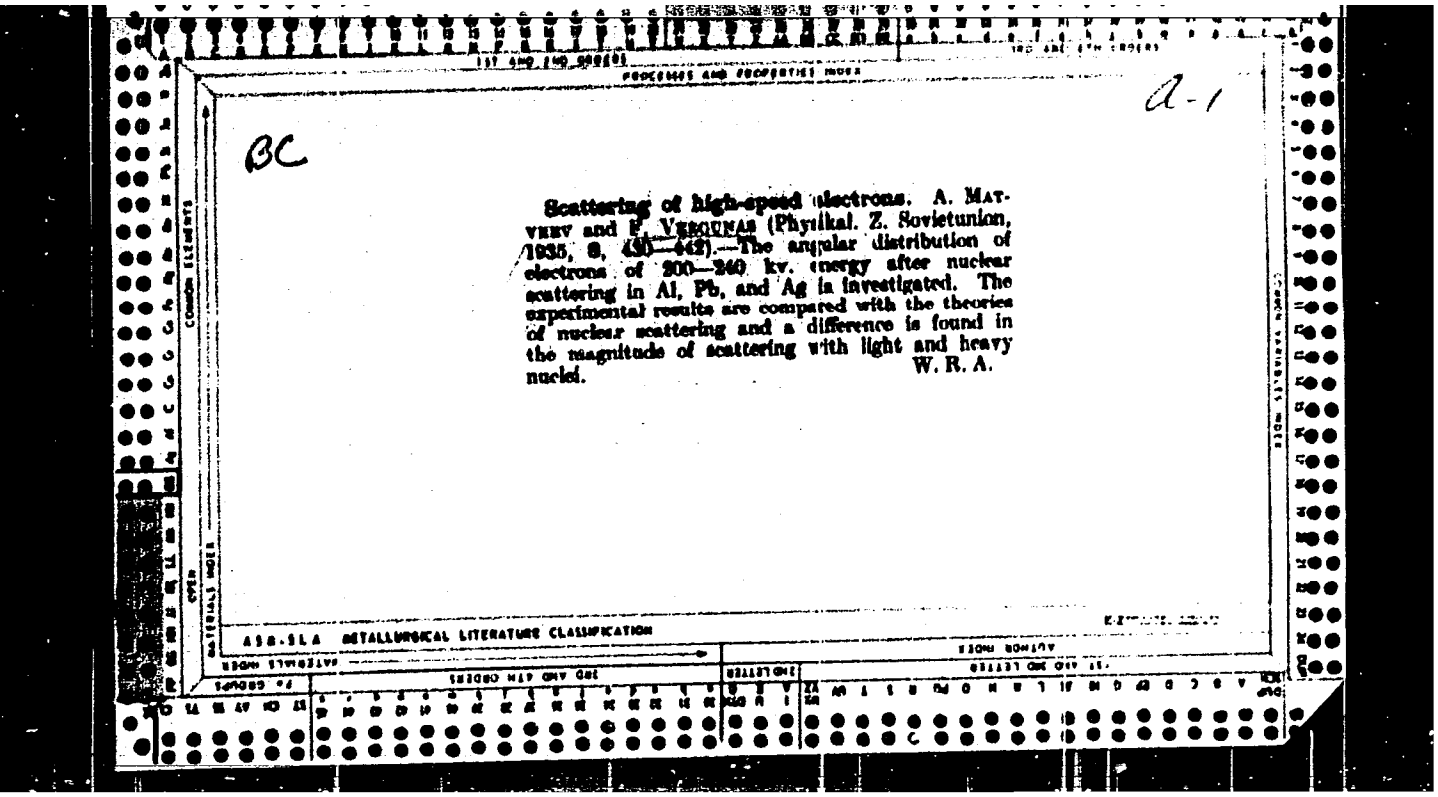
PERIODICAL: V sb.: Novoye v liteyn. proiz-ve. Nr 2. Gor'kiy, Knigoizdat, 1957, pp 274-278

ABSTRACT: The paper deals with specific drawbacks of the cast bronzes OTs 10-2, OF 10-1, AMTs 9-2, OTs 3.5-6.5, and of the silicon brass LK 80-3. Measures are outlined which resulted in an increased output of sound castings.

E. Sh.

1. Bronze-Casting 2. Brass-Casting

Card 1/1

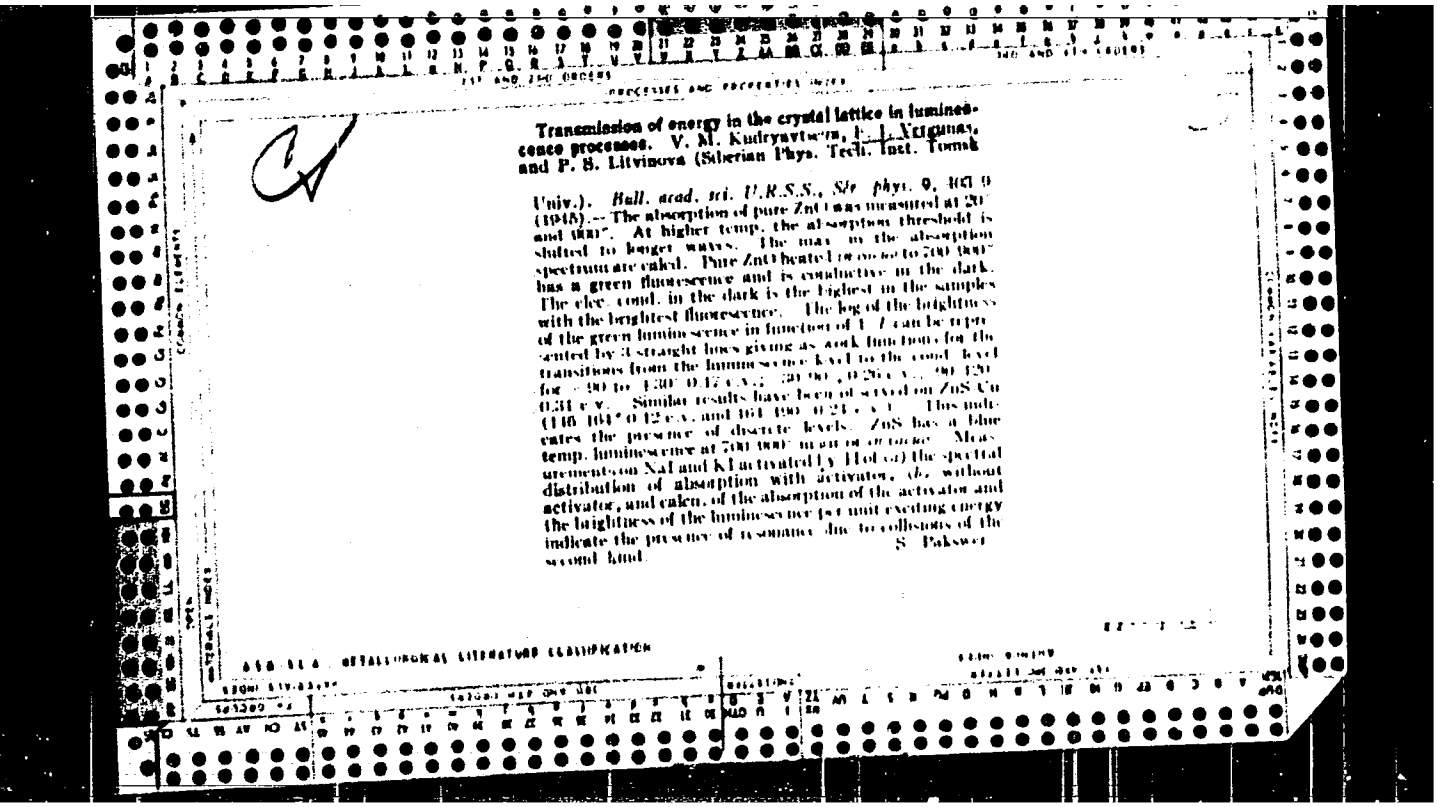


BC

a-1

Scattering of high-speed electrons. A. MATVEEV and F. VERGUNAS (Physikal. Z. Sovietunion, 1935, 8, 430—442).—The angular distribution of electrons of 200—240 kv. energy after nuclear scattering in Al, Pb, and Ag is investigated. The experimental results are compared with the theories of nuclear scattering and a difference is found in the magnitude of scattering with light and heavy nuclei. W. R. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Transmission of energy in the crystal lattice in luminescence processes. V. M. Kudryavtseva, P. I. Yerugina, and P. S. Litvinova (Siberian Phys. Tech. Inst., Tomsk Univ.). *Bull. acad. sci. U.R.S.S., Sér. phys.* 9, 467-9 (1945).—The absorption of pure ZnO was measured at 20° and 480°. At higher temp. the absorption threshold is shifted to longer waves. The max. in the absorption spectrum are called. Pure ZnO heated to 600 to 700° has a green fluorescence and is conductive in the dark. The elec. cond. in the dark is the highest in the samples with the brightest fluorescence. The log of the brightness of the green luminescence in function of $1/T$ can be represented by 3 straight lines giving as ordinates for the transitions from the luminescence level to the cond. level for −80 to +130° 0.17 e.v., 20 to 90°, 0.26 e.v., 90 to 130° 0.31 e.v. Similar results have been observed on ZnS:Cu (140 to 104° 0.12 e.v. and 104 to 90° 0.24 e.v.). This indicates the presence of discrete levels. ZnS has a blue temp. luminescence at 700° and an orange one. Measurements on NaI and KI activated by Tl (or Cl) the spectral distribution of absorption with activator, etc. without activator, and calcn. of the absorption of the activator and the brightness of the luminescence per unit exciting energy indicate the presence of resonance due to collisions of the second kind.

S. Pakswer

VERGUNAS, F. I.

Jul 47

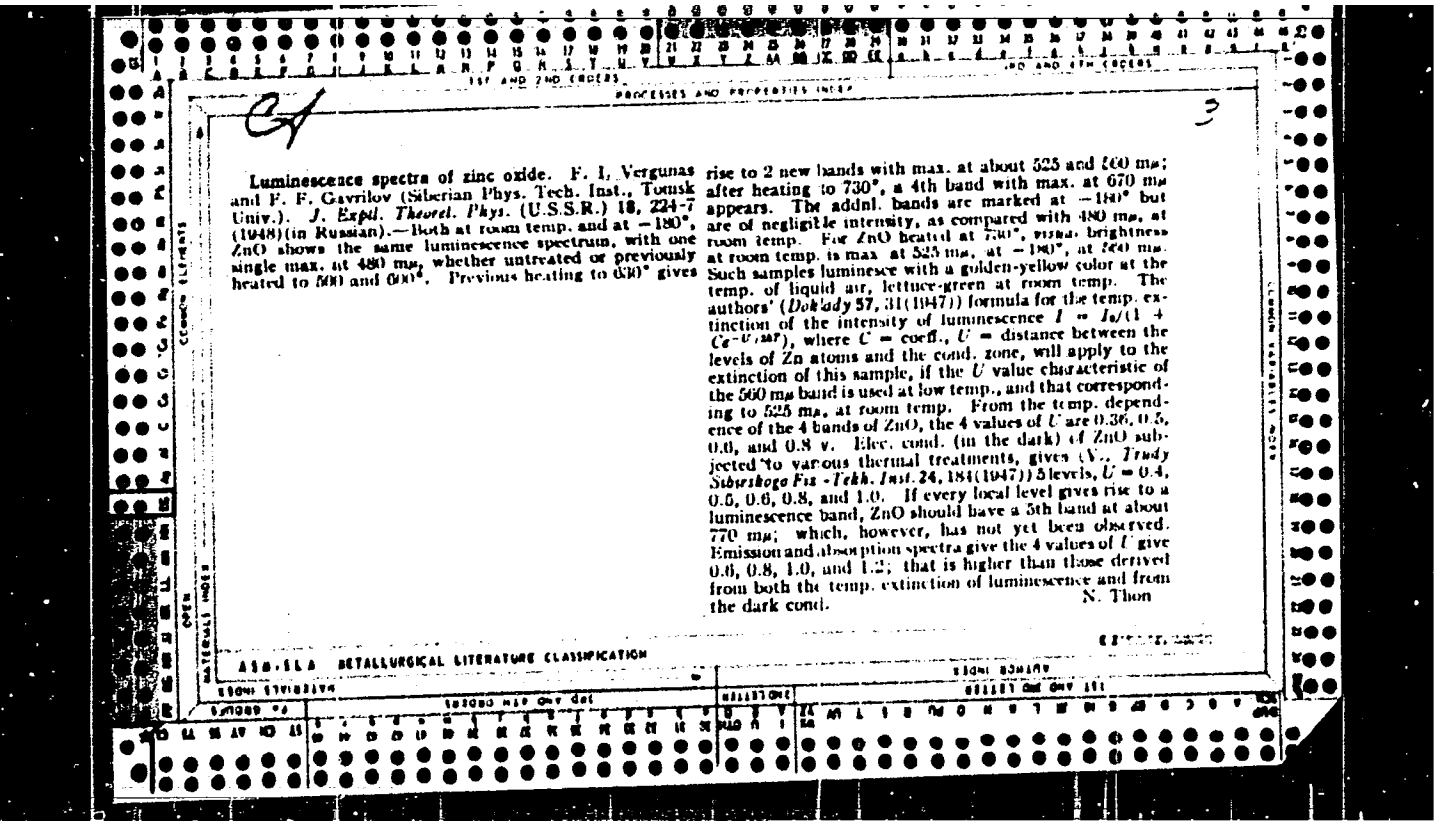
USSR/Physics
Luminescent Materials
Phosphors

"Temperature Quenching of the Photo-Luminescence of Zinc Oxide," F. I. Vergunas, F. F. Gavrilov, Siberian Phys-Tech Inst, Yomsk State U, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVII, No 1

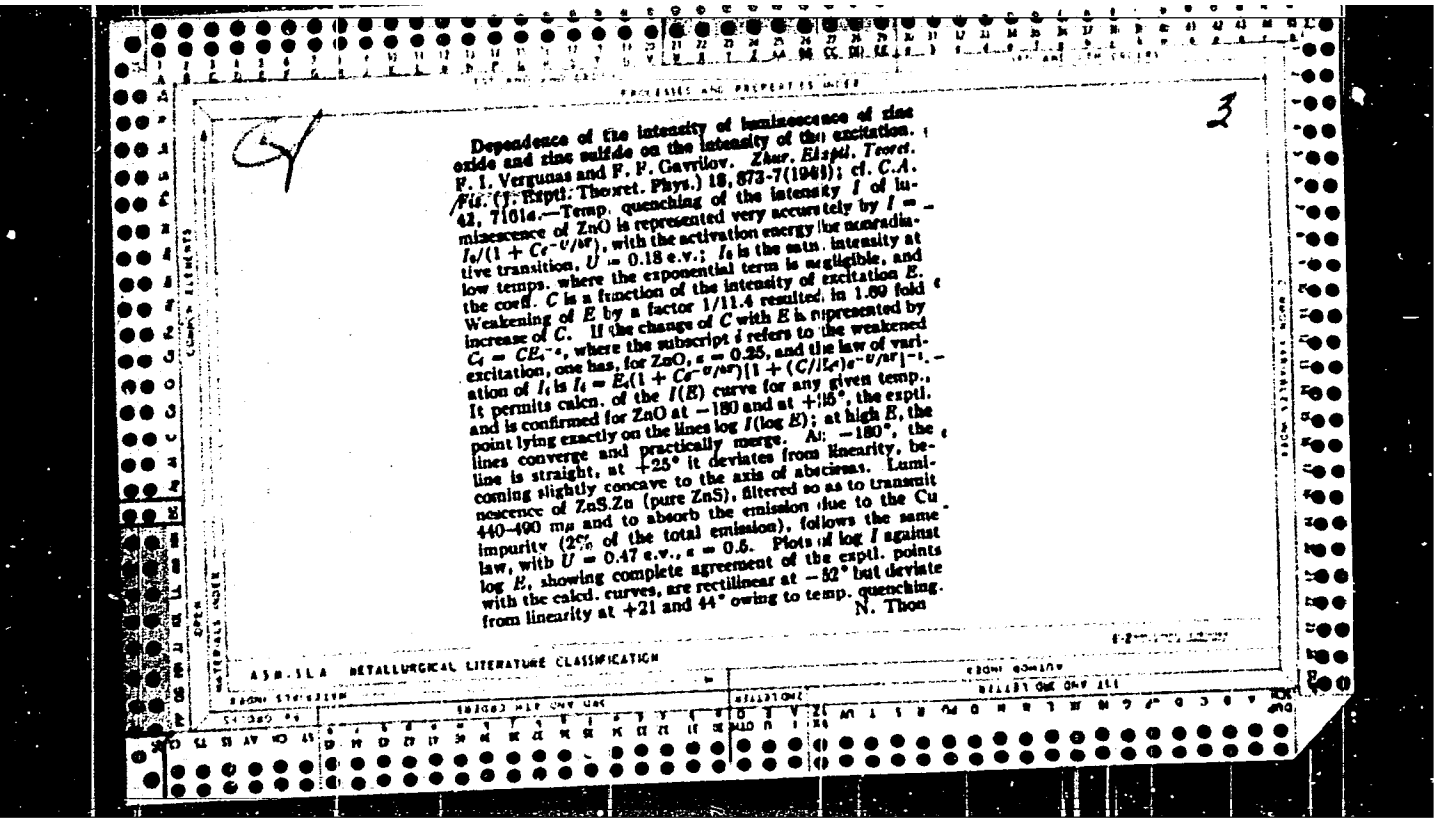
Describes experiments designed to show suitability of Gurney and Mott's formula for describing the quenching of luminescence of crystal phosphors. Submitted by Academician S. I. Vavilov, 14 Jan 1947.

PA 60T99



Luminescence spectra of zinc oxide. F. I. Vergunas and F. F. Gavrilov (Siberian Phys. Tech. Inst., Tomsk Univ.). *J. Exptl. Theoret. Phys.* (U.S.S.R.) **18**, 224–7 (1948)(in Russian).—Both at room temp. and at −180°, ZnO shows the same luminescence spectrum, with one single max. at 480 mμ, whether untreated or previously heated to 500 and 600°. Previous heating to 630° gives rise to 2 new bands with max. at about 525 and 560 mμ; after heating to 730°, a 4th band with max. at 670 mμ appears. The addnl. bands are marked at −180° but are of negligible intensity, as compared with 480 mμ, at room temp. For ZnO heated at 730°, visual brightness at room temp. is max at 525 mμ, at −180°, at 560 mμ. Such samples luminesce with a golden-yellow color at the temp. of liquid air, lettuce-green at room temp. The authors' (*Doklady* **57**, 31(1947)) formula for the temp. extinction of the intensity of luminescence $I = I_0/(1 + Ce^{-U/kT})$, where C = coeff., U = distance between the levels of Zn atoms and the cond. zone, will apply to the extinction of this sample, if the U value characteristic of the 560 mμ band is used at low temp., and that corresponding to 525 mμ, at room temp. From the temp. dependence of the 4 bands of ZnO, the 4 values of U are 0.36, 0.5, 0.6, and 0.8 v. Elec. cond. (in the dark) of ZnO subjected to various thermal treatments, gives (V., *Trudy Sibirskogo Fiz.-Tekh. Inst.* **24**, 184(1947)) 5 levels, U = 0.4, 0.5, 0.6, 0.8, and 1.0. If every local level gives rise to a luminescence band, ZnO should have a 5th band at about 770 mμ; which, however, has not yet been observed. Emission and absorption spectra give the 4 values of U give 0.6, 0.8, 1.0, and 1.2; that is higher than those derived from both the temp. extinction of luminescence and from the dark cond.

N. Thon



Dependence of the intensity of luminescence of zinc oxide and zinc sulfide on the intensity of the excitation. F. I. Vergunas and F. F. Gavrilov. *Zhur. Eksptl. Teoret. Fiz.* (J. Exptl. Theoret. Phys.) 18, 873-7(1948); cf. *C.A.* 42, 7161e.—Temp. quenching of the intensity I of luminescence of ZnO is represented very accurately by $I = I_0/(1 + Ce^{-U/\varepsilon T})$, with the activation energy for nonradiative transition, $U = 0.18$ e.v.; I_0 is the max. intensity at low temps. where the exponential term is negligible, and the coeff. C is a function of the intensity of excitation E. Weakening of E by a factor 1/11.4 resulted in 1.60 fold increase of C. If the change of C with E is represented by $C_i = CE_i^{-s}$, where the subscript i refers to the weakened excitation, one has, for ZnO, $s = 0.25$, and the law of variation of I_i is $I_i = E_i(1 + Ce^{-U/\varepsilon T})[1 + (C/|E_i)e^{-U/\varepsilon T}]^{-1}$. It permits calcn. of the $I(E)$ curve for any given temp., and is confirmed for ZnO at −180 and at +15°, the exptl. point lying exactly on the lines log I(log E); at high E, the lines converge and practically merge. At −180°, the line is straight, at +25° it deviates from linearity, becoming slightly concave to the axis of abscissas. Luminescence of ZnS.Zn (pure ZnS), filtered so as to transmit 440–490 mμ and to absorb the emission due to the Cu impurity (2% of the total emission), follows the same law, with $U = 0.47$ e.v., $s = 0.5$. Plots of log I against log E, showing complete agreement of the exptl. points with the calcd. curves, are rectilinear at −52° but deviate from linearity at +21 and 44° owing to temp. quenching.
N. Thon

VERGUNAS, F. I.

Vergunas, F. I. and Gavrilov, F. F. "The relative amount of the spontaneous afterglow of zinc oxide," Trudy Sib. Fiz.-tekhn. in-ta, Issue 26, 1948, p. 140-45, - Bibliog: 6 items

SO: U-5211, 17 December 1953, (Letopis 'Zhurnal 'nykh Statey, No. 26, 1949)

VERGUNAS, F. I.

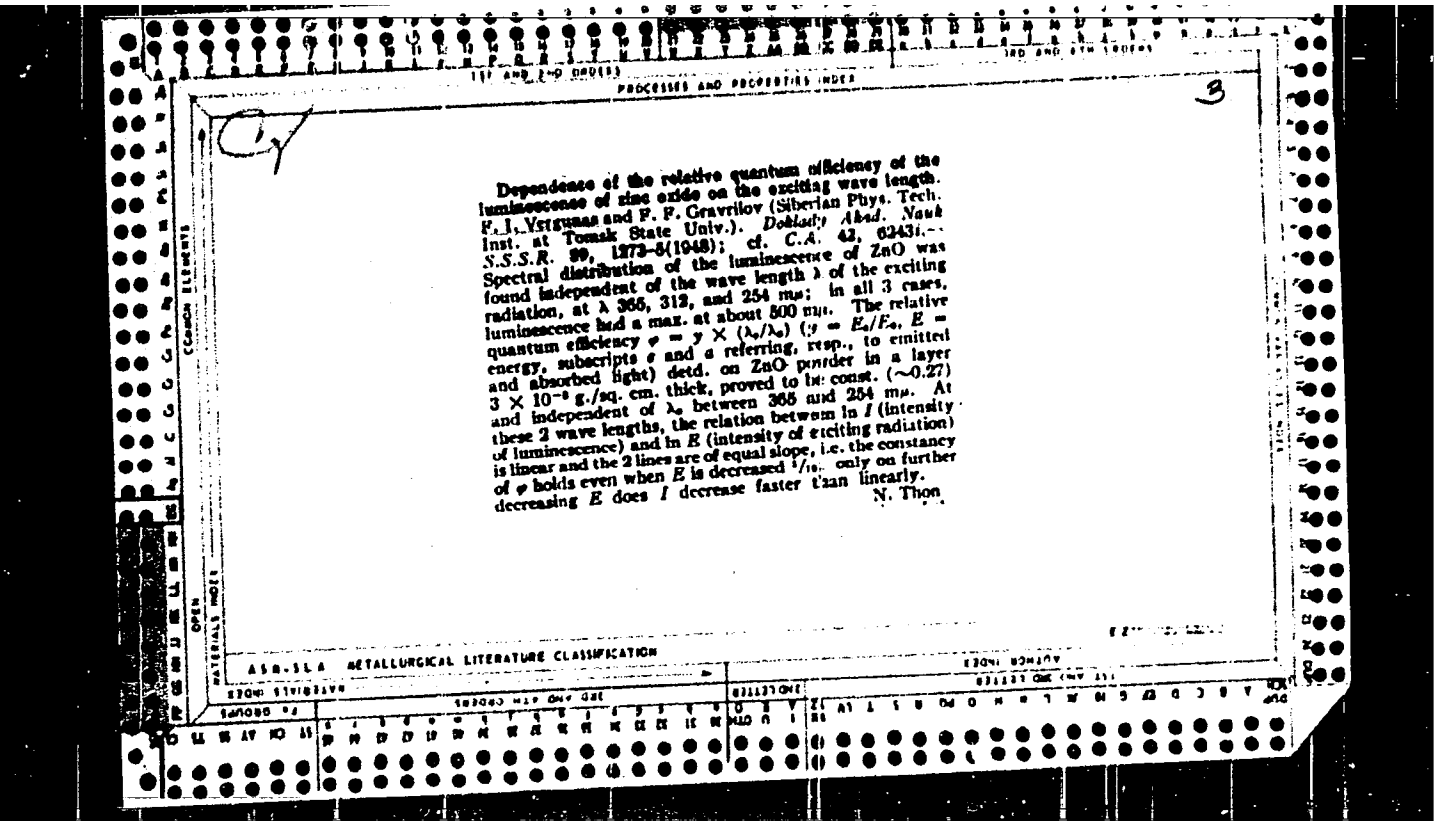
Vergunas, F. I. and Gavrilov, F. F. "Infrared luminescence of zinc oxide," Trudy Sib. fiz.-tekhn. in-ta, Issue 26, 1948, p. 146-48

SO: U5241, 17 December 1953, (Letopis 'Zhurnal 'nykh Statey, No. 26, 1949)

VERGUNAS, F. I.

Vergunas, F. I. and Gavrilov, F. F. "The action of the blue band of Zn in phosphorous ZnSMn with variable Mn concentration," Trudy Sib. fiz.-tekhn. in-ta, Issue 26, 1948, p. 149-54

SO: U-5241, 17 December 1953, (Letopis 'Zhurnal 'nykh Statey No. 26, 1949)



PROCESSES AND PROPERTIES INDEX

3

Dependence of the relative quantum efficiency of the luminescence of zinc oxide on the exciting wave length. F. I. Vyatkina and F. F. Gavrilov (Siberian Phys. Tech. Inst. at Tomsk State Univ.). *Doklady Akad. Nauk S.S.S.R.* **99**, 1273–6(1948); cf. *C.A.* **42**, 6243i.—Spectral distribution of the luminescence of ZnO was found independent of the wave length λ of the exciting radiation, at λ 365, 312, and 254 mμ; in all 3 cases, luminescence had a max. at about 500 mμ. The relative quantum efficiency $\varphi = \gamma \times (\lambda_e/\lambda_a)$ ($\gamma = E_e/E_a$, E = energy, subscripts e and a referring, resp., to emitted and absorbed light) detd. on ZnO powder in a layer 3×10^{-3} g./sq. cm. thick, proved to be const. (~0.27) and independent of λ_a between 365 and 254 mμ. At these 2 wave lengths, the relation between ln I (intensity of luminescence) and ln E (intensity of exciting radiation) is linear and the 2 lines are of equal slope, i.e. the constancy of φ holds even when E is decreased $^1/_{10}$. only on further decreasing E does I decrease faster than linearly.

N. Thon

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

VERGUNAS, F. I. [redacted]

Jan/Feb 49

USSR/Physics
Phosphors
Luminescence

"Dependence of Intensity of Spontaneous Post-Luminescence Upon Intensity of Exciting Light for Several Crystal Phosphors," F. I. Vergunas, Siberian Physicotech Inst, Tomsk State U, 7 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XIII, No 1

Studied temperature extinguishing of ZnS-Zn phosphors and dependence of I (intensity of luminescence) upon E (intensity of exciting light). Studied radiation of zinc in ZnS-Mn phosphors for various concentrations of Mn. Concluded that

36/49T81

[redacted]

Jan/Feb 49

USSR/Physics (Contd)

dependence of intensity of luminescence upon intensity of exciting light was linear for all phosphors studied at temperatures in region of temperature saturation, while I decreased faster with weakening excitation than indicated by I = kE at temperatures lying in the extinguishing region.

36/49T81

VERGUANS, F. I.

Mar 50

USSR/Physics - Luminescence
Activators

"Influence of Annealing Temperature and Activator Concentration Upon the Temperature Extinguishing of Phosphor Luminescence," F. I. Vergunas, F. F. Gavrilov, Siberian Physicotech Inst, Tomsk State U, 9 pp

"Zhur Eksper i Teoret Fiz" Vol XX, No 3 p.224-32.

Studies temperature extinguishing of blue and yellow bands of ZnS-Cu phosphors for various concentrations of the activator but with one temperature of annealing, and phosphors with one and the same concentration

155T75

Mar 50

USSR/Physics - Luminescence (Contd)

of the activator but with different temperatures of annealing. For these bands, studies dependence of luminescence intensity I upon intensity of excitation E of the light. Shows this dependence can be compared with the law of temperature extinguishing of phosphor luminescence. Submitted 6 Oct 49.

155T75

1. VERGUNAS, F. I.

2. USSR (600)

4. Phosphors

7. Thermal extinction of luminescence and photoconductivity of zinc sulfide phosphors, Iac. AN SSSR. Ser. fiz., 15 No. 5, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

VERGUNAS, F. I.

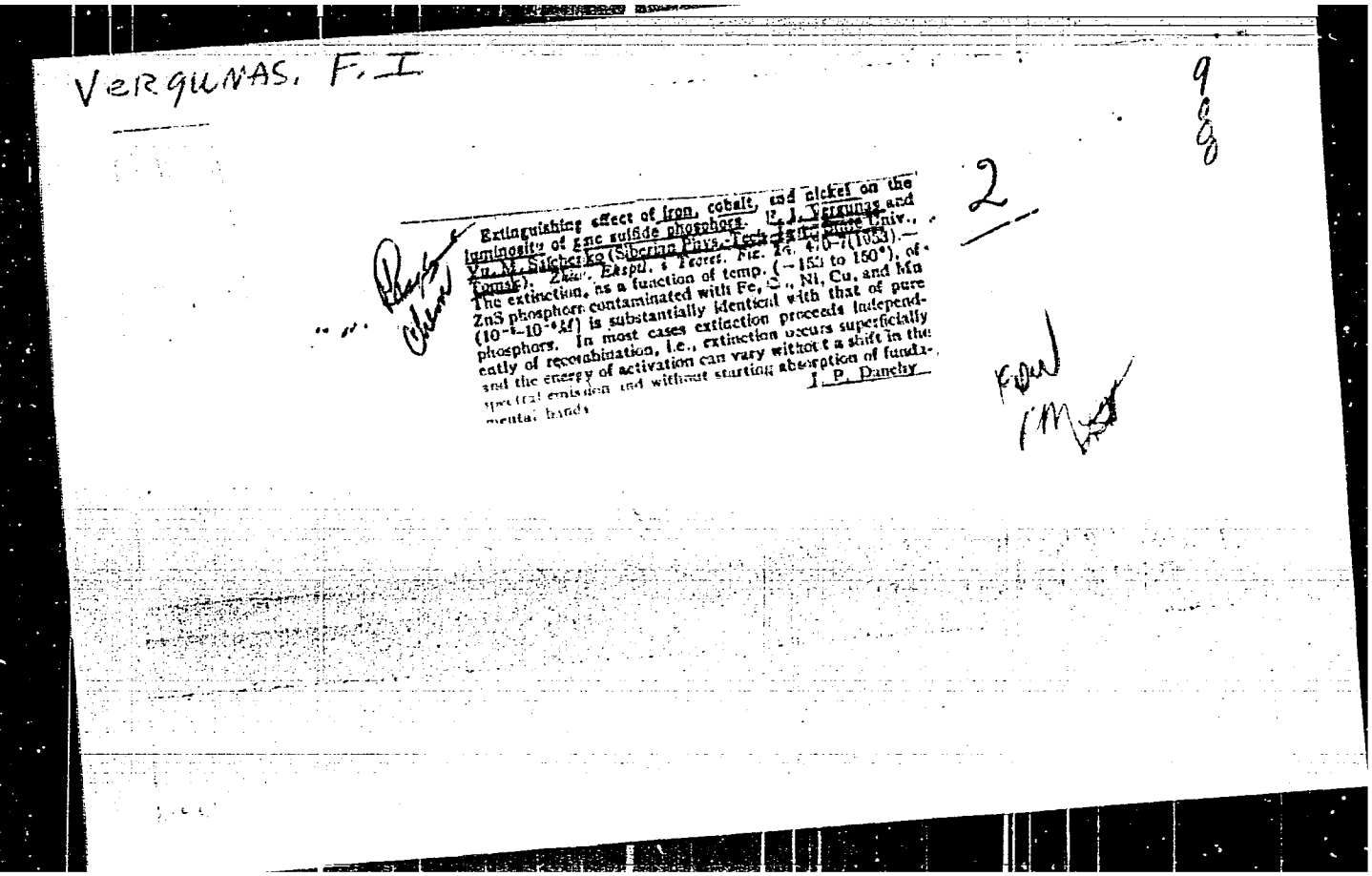
Physics (2)

1121

LUMINESCENCE OF THE ELECTRONIC SEMICONDUCTOR —ZINC OXIDE. F. I. Vergunas and G. A. Konovalov. Translated by J. I. Pankove from Zhur. Eksptl' i Teoret. Fiz. 23, 712-19(1952). 17p. (AEC-tr-1638)

The hypothesis is offered that Zn atoms are responsible only for the conductivity of ZnO, and Zn^+ ions appear as centers of luminescence. The phosphorescence which is observed in ZnO at low temperature is explained by the activation for the process of recombination of free electrons with ionized centers. (tr-auth)

Nuclear Science Abstracts
Vol. 8 No. 4
Feb. 28, 1954
Physics



VERGUNAS, F. I

Extinguishing effect of iron, cobalt, and nickel on the luminosity of zinc sulfide phosphors. [In Russian] F. I. Vergunas and Yu. M. Sidchenko (Siberian Phys.-Tech. Inst., Tomsk). Zhur. Eksptl. i Teoret. Fiz. 24, 470–7 (1953).—The extinction, as a function of temp. (−155 to 150°), of ZnS phosphors contaminated with Fe, Co, Ni, Cu, and Mn (10^{-4}–10^{-2} M) is substantially identical with that of pure phosphors. In most cases extinction proceeds independently of recombination, i.e., extinction occurs superficially and the energy of activation can vary without a shift in the spectral emission and without starting absorption of fundamental bands. J. P. Danehy

VERGUNAS, Felitsianna Ignat'yevna,

Academic degree of Doctor of Physio-Mathematical Sciences, based on her defense, 26 November 1954, in the Council of Tomsk State U imeni Kuybyshev, of her dissertation entitled: "Temperature dissipation of radiation of phosphorescent zinc sulfides and the disease of post luminosity in the process of dissipation."

Academic degree and/or title: Doctors of Sciences

SO: Decisions of VAK, List no. 4, 25 February 1956, Byulleten' MVO SSSR, No. 1, January 1957, Moscow, pp. 14-24, Uncl. JPRS/NY-440

VERGNAS, P. I. and AGASHKIN, C. V.

"Dielectric Losses of ZnS-Cu and ZnS-Cu, Fe phosphors," pp 377-382, 111, 5 ref

Abst: Results are presented of an examination of the frequency relationship of two phosphors ZnS-Cu (Cu-10^{-4} g/g, firing temperature during preparation process - 1,200°C) and ZnC-Cu, Fe (Cu-10^{-4} g/g, Fe-10^{-5} g/g).

SOURCE: Izvestiya Tomskogo Politekhn. In-ta. S. M. Kirova (News of the Tomsk Polytechnic Institute imeni S. M. Kirov), Volume 91, Works of the Confernece on Solid Dielectrics, Tomsk, September 1955, Tomsk, Publishing House of the Polytechnical Institute, 1956

Sum 1854

VERGUNAS, F. I.

FD-1853

USSR/Physics - Phosphors

Card 1/1 Pub. 146-13/25

Author : Vergunas, F. I., and Gasting, N. L.

Title : Laws governing the extinguishing of the after-glow of zinc sulfide phosphors in the region of temperature quenching

Periodical : Zhur. eksp. i teor. fiz. 28, 3, 352-360, March 1955

Abstract : The authors expound the results of an investigation into the influence of temperature and intensity, and also duration of excitation upon the laws governing the extinguishing of the after-glow of certain zinc sulfide phosphors close to and in the region of quenching. An explanation of their obtained laws and their opinions on the form of the elementary law of quenching will be given in a succeeding article. Six references e.g. V. V. Antonov-Romanovskiy, DAN SSSR, 17, 95, 1937 and Trudy FIAN, 1, 35, 1937 and 2, 157, 1942.

Institution: Siberian Physicotechnical Institute at Tomsk State University

Submitted : March 30, 1953

VERGUNAS F.I.

B-5

USSR / Physical Chemistry. Crystals

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25928

Author : F.I. Vergunas.

Title : Law of Afterglow Damping of Zinc Sulfide Phosphors Near and Within Temperature Damping Region.

Orig Pub : Optika i spektroskopiya, 1956, 1, No 3, 416 - 426

Abstract : It is assumed in order to explain the regularities of afterglow of ZnS phosphors near and within the damping region that the damping kinetics changes (the monomolecular damping type chances into the bimolecular one) after switching off the exciting light, and that the process of nonradiating electron transitions to the normal levels of the activator requires a thermal activation. In the result of the further development of the theory of Adirovich based on these assumptions, a law of damping was deducted, which is represented by an exponential hyperbola, or a hyperbola of

Card : 1/2

-USSR./Physical Chemistry. Crystals.

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 25928

B-5

Abstract : a fractional or of the second order depending on the parameter γ (ratio between localization and recombination probabilities) and the ratio between the numbers of free sites on the localization and recombination levels.

Card : 2/2

VERGUNAS, F. I.

B-5

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29732

Author : Agashkin O. V., Vergunas F. I.
Inst : Siberian Physico-Technological Institute at the Tomsk University
Title : Investigation of Attenuation of the Afterglow of ZnS-Cu Phosphor in the Temperature Tenebrescence Region'

Orig Pub: Tr. Sibirsk. fiz.-tekhn. in-ta pri Tomskom un-te, 1956, No 35, 101-109

Abstract: Investigation of attenuation of afterglow of ZnS-Cu (10 ' g/g, 900°C) phosphor, near (364-493°K), It was found that near, and within, the tenebrescence region, the attenuation curves, recorded at full excitation and low intensities of exciting light, are defined by fractional Becquerel hyperbolas $I = At^{-}$, wherein is constant near the tenebrescence region and increases with temperature within the tenebrescence region. With high intensities of excitation these curves become exponentials. Depth of localization levels which bring about attenuation of afterglow, in the vicinity and within the tenebrescence region, is, respectively, of 0.2 and 0.17 eV, that is practically the same.

-27-

Card : 1/1

VERGUNAS, F.I.

51-4-7/26

AUTHORS: Vergunas, F. I. and Agashkin, O. V.

TITLE: Photo-dielectric Effect in ZnS-Cu Phosphor. (Fotodielektricheskiy effekt v fosfore ZnS-Cu).

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.4, pp.338-344. (USSR)

ABSTRACT: Capacitance C and tangent of the loss-angle tan δ of a capacitor containing a crystal phosphor change when the latter is illuminated. This effect is called a photo-dielectric effect (p.d.e.). This effect is observed in photo-conducting phosphors (Ref.1). Some authors ascribe p.d.e. to (a) electrons localized at capture levels or to the stored light-sum (Ref.2), while others regard (b) photo-conductivity of the granular sample to be responsible for this effect (Ref.3). Irrespective of whether mechanism (a) or (b) is responsible, on increase of frequency the change in the loss-angle tangent $\Delta\tan\delta$ passes through a maximum, and the change in capacitance $\Delta C/C_o$ decreases. Dependence of the capacitance change on the intensity of exciting light

Card 1/6

Photo-dielectric Effect in ZnS-Cu Phosphor.

should be the same for both mechanisms. The present authors studied phosphor ZnS-Cu (Cu concentration 10^{-4} g/g; 1100°C) in order to decide which mechanism is responsible for p.d.e. The optical properties of the samples were obtained by L.P. Krasovskaya and Yu.L. Lukantsever. All measurements were made using a Q-meter KB-1. One capacitor electrode was made of aluminium foil and the other of nickel-plated netting with 575 elements per cm^2. The electrode surface was 27 cm^2, the phosphor thickness was 20 mg/cm^2. A layer of mica was placed between the sample and the nickel electrode, and plate glass on top of the nickel electrode. Measurements can be made in a wide range of temperatures (116-550°K). The phosphor was excited by the mercury triplet at 365 mμ. Measurements of tanδ and C were made in the frequency range 3 x 10^4 - 6 x 10^6 c/s. The frequency dependences of tanδ and C of the capacitor with ZnS-Cu were obtained at various intensities of the exciting light E and at various temperatures. Fig.1 shows the frequency dependences of the photo-

Photo-dielectric Effect in ZnS-Cu Phosphor.

dielectric effect for ZnS-Cu at various light intensities E (curve 1: E - 100%; curve 2: E - 3.3%; curve 3: E - 0.1%). Five weak maxima of $\Delta \tan\delta$ in Fig.1 are due either to electrons localized at capture centres, or to some properties of the granular structure of the sample. These maxima are superimposed on an intense maximum due to conductivity in the granular sample. Fig.2 shows the result obtained at three frequencies at room temperature (curves marked 1: 2.15 Mc/s; curves marked 2: 387 kc/s; curves marked 3: 77 kc/s). With increase of E the change in capacitance $\Delta C/C_o$ tends to saturation while $\Delta \tan\delta$ passes through a maximum. Both the frequency and the exciting-light intensity dependences of p.d.e. indicate that the effect of the localized electrons is not important, but that conductivity of the granular sample is dominant. The frequency dependence of p.d.e. was also obtained at liquid-oxygen temperature both during and after excitation. Luminescence, and consequently conductivity, after the excitation had ceased, reached a certain low steady-state value in several seconds. After 2 minutes the p.d.e. fell to 5%

Photo-dielectric Effect in ZnS-Cu Phosphor.

of its value during excitation, and this effect may be ascribed to "frozen-in" light-sum or weak residual conductivity. It can be concluded, therefore, that above 116°K the localized electrons are responsible for no more than 5% of p.d.e. Fig.3 shows the temperature dependence of p.d.e. at 100-550°K at different frequencies and exciting-light intensities. This temperature dependence is satisfactorily explained by changes in concentrations of free electrons, and it is not due to localized electrons. The theoretical formulae obtained for the free-electron mechanism (case (b), conductivity of the granular sample) derived in this paper are in good agreement with the experimental curves of Fig.3 for $\Delta \tan \delta$. Theory predicts saturation for $\Delta C/C_0$, while actually, after reaching a maximum this quantity decreases (Fig.3). This decrease is due to temperature quenching of luminescence. Again, the observed behaviour can be explained by changes of concentration of free electrons in the region where

Card 4/6

Photo-dielectric Effect in ZnS-Cu Phosphor.

quenching occurs. The latter conclusion was confirmed by finding the temperature dependence of a p.d.e. for ZnS-Zn phosphor in which quenching of the blue band began at 210°K. The results are shown in Fig.4 which indeed confirms that change of capacitance $\Delta C/C_o$ begins to fall at 210°K. Fig.5 shows thermo-curves of luminescence and p.d.e. of ZnS-Cu phosphor at various frequencies (thermo-curves are defined as temperature dependences when light illumination had ceased). In obtaining these curves the phosphor was excited for 10 minutes at liquid-oxygen temperature. Then the phosphor was left for 3 minutes in darkness and heating was carried out at a rate of 0.6 deg/sec. Thermo-curves for luminescence (Fig.5, curve 1) and for p.d.e. (Fig.5, curves 2-4) were obtained at E = 100%. The form of thermo-curves is ascribed by the present authors to change of concentration of free electrons in the process of heating of the phosphor. Thus all the experiments tend to confirm the hypothesis of the predominant role of conduction electrons in the photo-dielectric effect in ZnS-Cu. This does not preclude the possibility of

Photo-dielectric Effect in ZnS-Cu Phosphor.

the localized electrons being dominant in p.d.e. of other phosphors. There are 5 figures and 5 references, 2 of which are Slavic.

ASSOCIATION: Siberian Physico-technical Institute. (Sibirskiy fiziko-tekhnicheskiy institut).

SUBMITTED: January 31, 1957: submitted to the Editor of "Izvestiya AN SSSR" on December 8, 1956.

AVAILABLE: Library of Congress.

Card 6/6

VERGUNAS, F.I.

48-4-10/48

SUBJECT: USSR/Luminescence.

AUTHOR: Vergunas F. I.

TITLE: Law of Afterglow Decay for Zinc-Sulfide Phosphors near and in the Region of Temperature Quenching (Zakon zatukhaniya posleyecheniya tzink-sul'fidnykh fosforov vblizi i v oblasti temperaturnogo tusheniya)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #4, pp 507-508 (USSR)

ABSTRACT: The Adirovich theory is further developed for explanation of experimental regularities in the afterglow of zinc-sulfide phosphors, which were observed near and in the region of temperature quenching.

In distinction from that theory, parameter γ ,which is equal to a ratio of localization probabilities to the sum of recombination probabilities accompanied and unaccompanied with radiation, is a temperature function.

The temperature-dependence of γ determines the change of decay law in the quenching region. This parameter remains constant

Card 1/2

VERGUNAS F.I

48-8-12/36

SUBJECT: USSR/Luminescence

AUTHORS: Vergunas F. I. and Agashkin O.V.

TITLE: Electric and Optical Properties of ZnS-Cu-Phosphor (Elektricheskiye i opticheskiye svoystva ZnS-Cu-fosfora)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, #5, p 653 (USSR)

ABSTRACT: Changes in the values of the tangent of the angle of dielectric losses, $\Delta tg\delta$, and capacitance $\Delta C/C_0$ of a condenser containing ZnS-Cu-phosphor (10^{-4} g of Cu per 1 g of phosphor, t=1,100°C) occurring during the exposure to light of 365 mμ wavelength were determined. The dependences of $\Delta tg\delta$ and $\Delta C/C_0$ on frequency in the range from $3x10^4$ to $6x10^6$ cycles were measured. It was discovered that $\Delta tg\delta$ had 4 peaks and $\Delta C/C_0$ decreased from a larger constant value to a smaller one. The peaks of $\Delta tg\delta$ are ascribed to electrons localized in traps of various depths.

Temperature changes of $\Delta tg\delta$ and $\Delta C/C_0$ during excitation were studied and thermal curves of $\Delta tg\delta$ were obtained and compared with the thermal luminescence curves.

Card 1/2

VERGUNAS, F. I.

Agashkin, O.V. and Vergunas, F.I. [Tomsk, Sibirskiy Fiziko-tekhnicheskiy Institut (Siberian Institute of Physical Technology)] On Reasons for the Photodielectric Effect of Zinc Sulfide Phosphors

(The Physics of Dielectrics; Transactions of the All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1958. 245 p. 3,000 copies printed.

This volume publishes reports presented at the All-Union Conference on the Physics of Dielectrics, held in Dnepropetrovsk in August 1956 sponsored by the "Physics of Dielectrics" Laboratory of the Fizicheskiy Institut imeni Lebedeva AN SSSR (Physics Institute imeni Lebedev of the AS USSR), and the Electrophysics Department of the Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University).

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SOV/58-59-5-10961

24.2600

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, pp 150 - 151 (USSR)

AUTHORS: Agashkin, O.V., Vergunas, F.I.

TITLE: On the Causes of the Photodielectric Effect in Zinc Sulfide Phosphors

PERIODICAL: V sb.: Fiz. dielektrikov, Moscow, AS USSR, 1958, pp 28 - 35. Diskus., p 52

ABSTRACT: The authors measured the frequency, light, and temperature characteristics of the photodielectric effect (PDE) in ZnS-Cu-phosphor and ZnS-Cu-Fe-phosphor. The frequency characteristics of $\Delta \mathrm{tg}\,\delta$ and ΔC for ZnS-Cu are in good agreement with those of an equivalent circuit consisting of two capacitors connected in series, one of which is shunted by an active resistance. When the exciting light is switched off at liquid-air temperatures, the total light diminishes negligibly, while the luminescence brightness and, consequently, the conductivity fall off rapidly, and within two minutes the PDE drops to 5% of the value it possesses during the excitation period. On the basis of these measurements, as well as the results of the temperature dependences of the PDE, the authors conclude that conduction electrons are responsible for the

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On the Cuases of the Photodielectric Effect in Zinc Sulfide Phosphors

greater part of the PDE in ZnS-Cu-phosphor. On investigating the frequency dependences of the capacitance of the condenser with ZnS-Cu-Fe-phosphor in the dark and under illumination, it is found that the difference in Δ C does not decrease with an increase of frequency as it should (RZhFiz, 1957, Nr 6, 15617) if the PDE were entirely caused by a change in grain conductivity during illumination. This allows the hypothesis that in the case of ZnS-Cu-Fe, the PDE is partially due to localized electrons. The authors also measured the dielectric constants of these phosphors at a frequency of 2 Mc. In the case of ZnS-Cu the increment in $\Delta \varepsilon = \varepsilon_{light} - \varepsilon_{dark}$ depends on the filler, but not in the case of ZnS-Cu-Fe. The latter circumstance also attests to the fact that a true change in ε is observed in the case of the excitation of ZnS-Cu-Fe. (Fiz. tekhn. in-t, Tomsk, USSR).

A. Shneyder

Card 2/2

SOV/51-5-2-9/26

AUTHORS: Verguna, F.I. and Lukontsever, Yu.L.

TITLE: Determination of the Absolute Values of the Parameter γ, Equal to the Ratio of Probabilities of Localization and Recombination, for the ZnS-Cu Phosphor (Opredeleniye dlya fosfora ZnS-Cu absolyutnykh znacheniy parametra γ, ravnogo otnosheniyu veroyatnostey lokalizatsii i rekombinatsii)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 156-161 (USSR)

ABSTRACT: Afterglow of ZnS phosphors is explained in Ref 1, using Adirovich's law (Ref 2) supplemented by taking temperature quenching (Ref 3) into account. For the majority of ZnS phosphors the decay laws can be approximated by hyperbolae near the quenching region and they become exponentials in the quenching region itself. According to Adirovich the value of γ, which is the ratio of localization and recombination probabilities, is greater than 1 near quenching and it approaches zero in the quenching region itself. The aim of the present investigation was to determine the absolute values of the parameter γ for the ZnS-Cu phosphor with 10^{-4}g/g of Cu and to verify whether these values of γ agree with Adirovich's theory. The authors derive formulae for γ (Eqs 5, 6) for phosphors with localization levels of one depth and

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Determination of the Absolute Values of the Parameter γ, Equal to the Ratio of Probabilities of Localization and Recombination, for the ZnS-Cu Phosphor

emission centres of one type. These formulae give γ as a function of n which is the light sum at time t, I which is the afterglow brightness at time t, and p which is the probability of thermal liberation of localized electrons. Real phosphors usually contain localization levels of several depths and at least two types of emission centres. Under certain special conditions, however, a real phosphor may behave as if it was ideal, i.e. it will contain localization levels of one depth only and only one type of emission centres. Under such conditions the value of γ can be determined using the authors' formulae. For the ZnS-Cu phosphor studied here it was found that it behaves as an ideal phosphor above 275°K provided the intensity of excitation is sufficiently high. To find the absolute values of γ at various temperatures decay curves were obtained. From them the afterglow brightness and the corresponding light-sums were obtained and the value of γ was calculated. The temperature dependence of γ is given as curve 1 in Fig 1. Curve 2 in Fig 1 gives the temperature quenching of luminescence at constant excitation. In the quenching region the value of γ approaches zero. Near quenching γ first increases with increase of temperature and then reaches a maximum. A similar result was obtained for the ZnS-Cu,Co phosphor (Ref 8). This increase of γ with increase of

Determination of the Absolute Values of the Parameter γ, Equal to the Ratio of Probabilities of Localization and Recombination, for the ZnS-Cu Phosphor

temperature indicates that the process of localization of electrons requires energy which is provided here via thermal vibrations. Generally speaking the results of Fig 1 confirm Adirovich's theory (Ref 2). The value of γ was found to be independent of the excitation intensity on decrease of the latter from 100-18%. On further decrease of the excitation intensity the value of γ increases sharply (Fig 2). This is because at low excitation energies localization levels of more than one depth exist and the theory given here no longer applies. There are 2 figures, 1 table and 11 references, 9 of which are Soviet, 1 American and 1 English.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: September 16, 1957

Card 3/3 1. Phosphors--Luminescence 2. Luminescence--Analysis 3. Phosphors --Excitation

SOV/51-5-2-10/26

AUTHORS: Verguuas, F.I. and Kranovskaya, L.R.

TITLE: Decay of Afterglow of ZnS-Cu Phosphors in log J, log t and log J, log (1 + pt) Coordinates (Zakonomernosti posleswecheniya fosforov ZnS-Cu v koordinatakh lg J, lg t i lg J, lg(1 + pt))

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 162-166 (USSR)

ABSTRACT: According to Adirovich's theory (Ref 1) in an "ideal" phosphor, i.e. a phosphor in which afterglow is due to localization levels of one depth and emission centres of one type, dependence of the afterglow intensity J on time t is approximated by a straight line (which represents a hyperbola) only in coordinates log J, log (1 + pt), where p is the probability of thermal liberation of localized electrons. In log J, log t coordinates this dependence should be curvilinear. Experimental dependences of J on t may be rectilinear in log J, log t coordinates, in apparent contradiction with Adirovich's theory. Antonov-Romanovskiy (Ref 2) deduced from this that the decay law of Adirovich is not supported by experiment. This conclusion seems to be premature. Adirovich's theoretical decay law was obtained for an ideal phosphor and it must be compared with experiment only under such conditions when a real phosphor behaves ideally. The aim of the present investigation was to compare Adirovich's theory with

Card 1/3

Decay of Afterglow of ZnS-Cu Phosphors in log J, log t and log J, log (1 + pt) Coordinates

experiment using ZnS-Cu phosphor with 10^{-4} g/g of Cu under conditions when it behaves as an ideal phosphor. Analysis of thermoluminescence curves suggests that at temperatures above 169°K the phosphor used behaves ideally. To obtain the decay curves the phosphor was excited until the steady state was reached, then excitation ceased and measurements were started one second after that. The results obtained are given in Fig 1a in log J, log t coordinates. It is found that at temperatures higher than 274°K curvilinear dependences were obtained but at lower temperatures (170 and 235°K) the curves were rectilinear. These rectilinear dependences obtained at 170 and 235°K contradict an earlier result that the ZnS-Cu phosphor behaves ideally above 169°K. This circumstance is explained by the presence of shallow levels in addition to the 0.23 eV level, at these temperatures. When these shallow levels were pre-emptied by a special procedure it was found that the curves in the 192-235°K region were also curvilinear (see Fig 1b). Both series of curves shown in Fig 1 were reconstructed in log J, log (1 + pt) coordinates and are given in Fig 2. Comparison of

SOV/51-5-2-10/26

Decay of Afterglow of ZnS-Cu Phosphors in log J, log t and log J, log (1 + pt) Coordinates

Figs 1 and 2 shows that the curvilinear dependences in log J, log t coordinates become rectilinear in log J, log (1 + pt) coordinates. The straight lines in log J, log t coordinates, which represent hyperbolae become curvilinear in log J, log (1 + pt) coordinates. This confirms Adirovich's theory for ideal phosphors. Similar results were obtained for a ZnS-Cu phosphor prepared in the absence of oxygen. There are 2 figures, 1 table and 4 Soviet references.

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet (Gor'kiy State University)

SUBMITTED: October 4, 1957

Card 3/3 1. Phosphors--Luminescence 2. Luminescence--Decay 3. Phsophors--Excitation

VERGUNAS, F.I.; KOLOTKOV, V.V.; YASHIN, E.M.; SMIRNOVA, L.I.

Some properties of film-type electroluminescent capacitors.
Opt. i spektr. 16 no. 4:708-709 Ap '64. (MIRA 17:5)

84092
S/181/60/002/009/035/036
B004/B056

9.4160 (1105, 1137, 1331)

AUTHORS: Vergunas, F. I., Malkin, G. M.

TITLE: The Photodielectric Effect in ZnS - Cu, Co Phosphors

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2322-2329

TEXT: The authors discuss the various results published in Refs. 1-5 on the photodielectric effect (PHDE). The dependence of the capacity C, of tanδ (dielectric losses of the capacitor containing a crystal phosphor) on the frequency ω and the light intensity E resulting from these papers are given in a table. The authors aimed at proving that the PHDE was not caused by localized electrons. The object of the investigation was a ZnS - Cu,Co phosphor having a copper content of 3.10^{-5} g/g and a cobalt content of 10^{-6} g/g, which was pressed into "Ftoroplast-4" in a proportion by weight of 1:2. The PHDE was measured at frequencies of between 200 and 5.10^{6} cps. For measurements in the acoustic region, a TM-351 (TM-351) measuring bridge, and at radio-frequencies a KB-1 (KV-1) coulometer was used. The measurement results are given in the following diagrams:

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The Photodielectric Effect in ZnS - Cu, Co Phosphors

Fig. 1, $\Delta \tan \delta$ and C as functions of E at different frequencies; Fig. 2, PHDE during excitation and attenuation as a function of ω at 20°C; Fig. 3, circle diagram of PHDE at 20°C; Fig. 4, distribution of relaxation times during excitation and attenuation; Fig. 5, C_o as a function of temperature, and Fig. 6, C_o as a function of E. Although the dependence of C_o on E and temperature apparently indicates an effect of localized electrons, the authors found an explanation proceeding from the theory of conductivity and being in better agreement with other experimental data. In contrast to the scheme used in the theory of conductivity, the external field does not vanish in a real phosphor. This is prevented by the diffusion of electrons and their low concentration. The additional static capacity C_o is caused by the space charge, which is due to the shift of electrons on the grain boundaries. The author gives the following summary: 1) Under the action of localized electrons, $\tan \delta$ should approach saturation with increasing E. The $\tan \delta$ recorded for different E as functions of ω should not intersect. 2) If the theory of conductivity is applied, a curve with a maximum results for $\tan \delta = f(E)$, and the curves $\tan \delta = f(\omega)$, drawn for different E, intersect. The experimental results agree with the conditions

Card 2/3

The Photodielectric Effect in ZnS - Cu, Co Phosphors

S/181/60/002/009/035/036
B004/B056

(2). The authors thank K. A. Vodop'yanov for discussions. There are 6 figures, 1 table, and 10 references: 3 Soviet, 3 US, 1 French, 1 British, and 1 German.

ASSOCIATION: Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy institut (Gor'kiy Research Institute of Physics and Technology)

SUBMITTED: March 7, 1960

Card 3/3

21562

S/020/61/137/003/011/030
B104/B214

9.4160 (Incl. 2105, 3005; also 1136, 1464)

AUTHORS: Vergunas, F. I., and Malkin, G. M.

TITLE: The principal symptoms of photodielectric effect caused by conductivity in a granular specimen

PERIODICAL: Doklady Akademii nauk SSSR. v. 137, no. 3, 1961, 560-563

TEXT: In the present paper symptoms are given according to which the origin of photodielectric effect can be determined in each individual case. The polarization of localized electrons is designated as the photodielectric effect of the first kind, and the conductivity in a granular specimen as the photodielectric effect of the second kind. If the same mechanism holds for the polarization of localized electrons as for the thermal polarization of ions, the Eqs. (1) and (2):

$$\varepsilon = \varepsilon_\infty + \frac{4\pi A}{T(1+\omega^2 B^2 e^{2\alpha/kT})}; \quad (1)$$

$$\operatorname{tg}\delta = \frac{\omega \frac{A}{T} B e^{\alpha/kT}}{\frac{\varepsilon_\infty}{4\pi} + \frac{\varepsilon_\infty}{4\pi}\omega^2 B^2 e^{2\alpha/kT} + \frac{A}{T}}. \quad (2)$$

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The principal symptoms of ...

hold for the photodielectric effect of the first kind. The formulas for the photodielectric effect of the second kind are

$$C = \frac{D}{1 + \omega^2 / L\sigma^2}, \quad (3)$$

$$\operatorname{tg}\delta = \frac{B\sigma / \omega}{1 + L\sigma^2 / \omega^2}, \quad (4)$$

Here, A is a quantity proportional to the concentration of localized electrons, $Be^{U/kT}$ the relaxation time, α the conductivity of the grains, B, D, L constants determined by the dimensions of the specimen, and C the capacitance of the specimen. Taking into account the dependence of the sum of light n and conductivity σ on E and T, the following conclusions are drawn from this formula: In the photodielectric effect (phd.E.) of the first kind tan δ tends to a constant value with increasing E, in the case of the effect of the second kind, tan δ goes through a maximum. 2) With increasing E, ω_0 is displaced in the direction of higher frequencies in both cases. However, in the case of the effect of the first

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The principal symptoms of ...

kind the curve representing tan δ as the function of frequency for small E values lies inside that for large E values. In the case of the phd. effect of the second kind the tan $\delta = g(f)$ curves for different E values intersect. 3) C_0, the capacitance at $\omega = 0$, depends on the conditions of excitation (E, T) in the phd. effect of the first kind but not of the second kind. The two kinds of effects may be distinguished in this manner. In the case of a thermal electron polarization. By the example of ZnS-Cu, Co-P it is then shown that condition 3) is not always satisfied. It is also shown in the following that Co must depend on the conditions of excitation also in phd. effect of the second kind, and the result mentioned under point 3) comes about because not all processes occurring in a phosphor can be taken into account. (3) and (4) have to be replaced by the relations:

$$C = \frac{\sigma\theta}{1+\omega^2\theta^2}; \tag{10}$$

$$\operatorname{tg}\delta = \frac{\sigma\theta^2\omega}{\sigma\theta + C_\infty(1+\omega^2\theta^2)}; \tag{11}$$

$$\theta = C_0/\sigma. \tag{12}$$

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The principal symptoms of ...

Here, C_∞ is the capacitance of the capacitor without excitation, σ the initial conductivity of unpolarized grains, C_o the additional capacitance in a static field, and θ the relaxation time. Criteria are given in Table 1 according to which the phd. E. may be interpreted.

phd. E. caused by conductivity in the grain	phd. E. caused by localized electrons
1) There is a frequency maximum for tan δ in which region a dispersion for C exists.	1) The same
2) ω_o decreases with increase of E. tan δ as a function of f intersect for different E.	2) ω_o or tan δ do not depend on E, but both increase with increasing E. There are no intersections of the curves tan $\delta = g(f)$.
3) The height of the maximum of tan $\delta = g(f)$ and the value of C_o decrease with the decrease of E_o or increase of T.	3) The same.

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The principal symptoms of ...

phd. E. caused by conductivity in the grain	phd. E. caused by localized electrons
4) tan δ and C have a temperature maximum	4) The same.
5) C increases with E and tends to a saturation value; tan δ goes through a maximum.	5) C and tan δ tend to a saturation value with increase of E.
6) C_o increases with N for small concentration of conduction electrons and is independent of N for large concentrations.	6) There exists a parallelism in the variation of C_o and the sum of light.

There are 4 figures, 1 table, and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy institut (Gor'kiy Institute of Physical and Technical Research)

21562

The principal symptoms of,...

S/020/61/137/003/011/030
B104/B214

PRESENTED: September 24, 1960, by A. F. Ioffe, Academician

SUBMITTED: January 13, 1960

Card 6/6

ACCESSION NR: AP4041715 S/0181/64/006/007/2100/2106

AUTHORS: Vergunas, F. I.; Yenikeyeva, K. Sh.

TITLE: Dielectric and photodielectric properties of zinc-sulfide powdered electroluminophors

SOURCE: Fizika tverdogo tela, v. 6, no. 7, 1964, 2100-2106

TOPIC TAGS: luminor, zinc sulfide optic material, dielectric property, photoluminescence, capacitance

ABSTRACT: The purpose of the research was to develop a method for directly disclosing all the inhomogeneities (second phase and barrier layers in the grain itself) that distinguish electroluminors from photoluminors. A test procedure described by the authors elsewhere (Izv. AN SSSR, Ser. fiz. v. 26, 475, 1962) was used to test electroluminors made of EL-460, EL-520, and EL-580 powders from the "Krasny*y khimik" plant and some electroluminors from GIPKh. The

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ACCESSION NR: AP4041715

powders were uniformly distributed in a teflon filler. The dielectric characteristics were investigated in the temperature range 80--370K and the frequency range 20--4.5 x 10^6 cps at 1.5 volts. The tests have shown that the conductivity causing the peak in the loss angle is due to the presence of the second phase, and can be either of semiconductor or metallic character, depending on the concentration of sulfur above stoichiometric. Exposure to ultraviolet causes the dielectric properties to display several peaks, the number of which depends on the number of inhomogeneous grain regions with different conductivities and consequently different relaxation times. It is shown that all three loss-angle maxima observed under ultraviolet excitation are due to the conductivity in the inhomogeneous sample. It is concluded that the study of the dielectric and photoelectric effects by this method would be useful in the investigation of inhomogeneous materials such as are used in the construction of solid-state devices. Orig. art. has: 5 figures and 1 formula.

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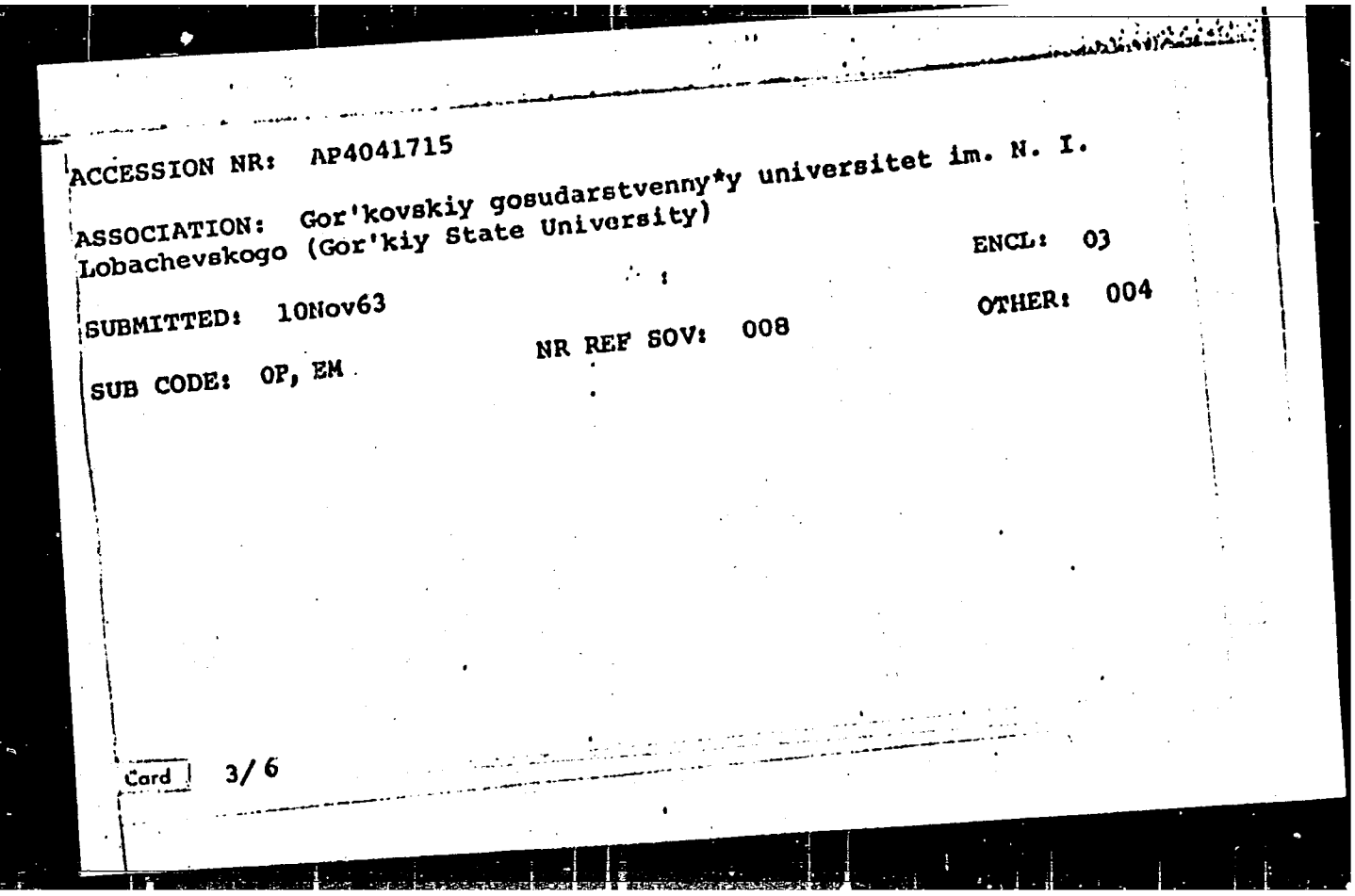

ACCESSION NR: AP4041715

ASSOCIATION: Gor'kovskiy gosudarstvenny*y universitet im. N. I. Lobachevskogo (Gor'kiy State University)

ENCL: 03

SUBMITTED: 10Nov63

OTHER: 004

NR REF SOV: 008

SUB CODE: OP, EM

Card 3/6

ENCLOSURE: 01

ACCESSION NR: AP4041715

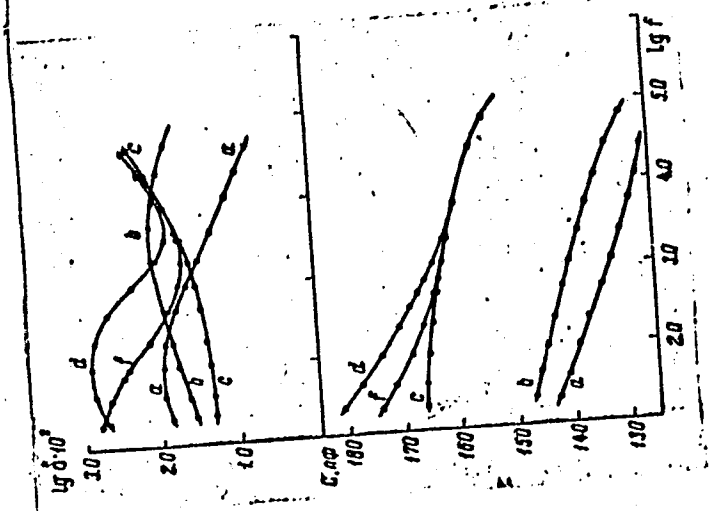

Fig. 2

Frequency dependence of tgδ and C for luminor EL-460

a - 80K, b - 140K, c - 290K,
d - ultraviolet light, 290K,
f - ultraviolet + infrared light, 290K

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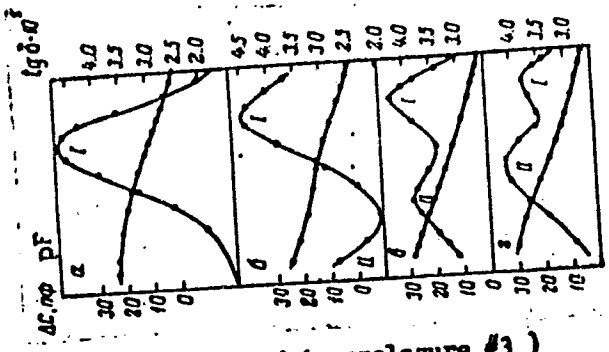
ENCLOSURE: 02

ACCESSION NR: AP4041715



(continued in enclosure #3)

Card 5/6